Monday, September 10, 2012

Congress Opening at Musikverein

08:30 - 09:40

Opening Ceremony — **Musikverein**

Johann Strauß II – Roses from the South, op. 388
(Orchestra of Vienna University of Technology)

Welcome Addresses
J. Eberhardsteiner (Congress Chairman)
M. Papadrakakis (ECCOMAS President)
P. Wriggers (IACM Vice-President)
S. Seidler (Rector Vienna University of Technology)
H.W. Engl (Rector University of Vienna)

Wolfgang A. Mozart – Divertimento in F, K 138

ECCOMAS Awards Ceremony

Franz Schubert – The Twin Brothers, Ouverture D 647
Europe Hymne

09:40 - 10:20

PL01 — **Musikverein**

Plenary Lecture
Chairperson: T. Hughes

09:40 1000 Virtual element methods
Brezzi, F.; Marini, L.D.

10:20 - 11:00

PL02 — **Musikverein**

Plenary Lecture
Chairperson: E. Ramm

10:20 1001 Modelling material failure across the scales: the multiscale paradigm
Geers, M.; Kouznetsova, V.; Coenen, E.; Bosco, E.

11:00 - 14:00
Return to University of Vienna & Lunch

14:00 - 16:00

MS107-1 — **J-SR10**

Multiscale modelling of materials and structures
Chairperson: T.S. Burczynski

14:00 1400 The three dimensional extended bridging domain method for modeling fracture **(Keynote Lecture)**
Talebi, H.; Rabczuk, T.

14:30 1401 Multiscale numerical modeling of composite material: a combined FE-ANN approach **(Keynote Lecture)**
Boso, D.P.; Lefik, M.; Schrefler, B.

15:00 1402 Digital filters for bridging molecular dynamics with finite elements at finite temperatures
Ramnisetti, S.B.; Anciaux, G.; Molinari, J.

15:20 1403 Computational models of nanocrystalline materials
Mrozek, A.; Burczynski, T.S.

15:40 4537 NEW An adaptive eXtended bridging scale method for crack propagation
Pattabhi Ramaiah, B.; Gracie, R.; Rabczuk, T.; Qian, D.; Bordas, S.P.A.

MS108-1 — **M-Elise Richter**

Modeling of diffuse and discontinuous failure of solids
Chairperson: E. Ramm

14:00 1404 A phase field model for dynamic fracture accounting for brittle to ductile failure mode transition and thermomechanical coupling **(Keynote Lecture)**
Miehe, C.; Hofacker, M.; Schänzel, L.

14:30 1405 On the analysis of coupled failure mechanisms in composite structures using the cohesive band method **(Keynote Lecture)**
Remmers, J.; Hosseini, S.; de Borst, R.

15:00 1406 Discrete element method to simulate brittle elastic material by using the cohesive beam model
Damien, A.; Iordanoff, I.; Charles, J.

15:20 1407 A model of cohesive fracture using an optimization method
Papoulia, K.D.

15:40 1408 Solid-shell finite element models for explicit simulations of crack propagation in thin structures
Cocchetti, G.; Pagani, M.; Perego, U.

MS115-1 — **M-HS48**

Dynamics of nonlinear structures with contact interfaces
Chairperson: K. Willner

14:00 1409 An efficient model condensation method for frequency-domain analysis of nonlinear vibrations of jointed structures
Petrov, E.

14:20 1410 A beam-to-beam contact formulation adapted to highly slender structures and its application to biopolymer networks
Meier, C.; Popp, A.; Cyron, C.J.; Müller, K.; Wall, W.A.

14:40 1411 A curve-to-surface (deformable) contact algorithm for beam and shell interactions
Konyukhov, A.; Schweizerhof, K.

15:00 1412 Large deformation frictional contact problems
Krause, R.; Poletti, V.

15:20 1413 Investigations of 3D contact problems using the large penetration scheme based on the covariant formulation for different contact approaches and higher order approximations of the contact surfaces
Izi, R.; Konyukhov, A.; Schweizerhof, K.

15:40 1414 Dynamic solution procedures for elastic dynamic contact problems based on B-differentiable equations method
Hu, Z.; Lin, G.; Fan, Y.

Monday, September 10, 2012, 14:00 - 16:00

MS128-1 **M-HS41**

Computational material modeling of wood and wood products
Chairperson: J. Eberhardsteiner

14:00 1415 A fracture mechanics approach to predict the bending strength of structural timber **(Keynote Lecture)**
Serrano, E.
14:30 1419 Numerical simulations of the loading process of dowel-type timber connections **(Keynote Lecture)**
Dorn, M.; de Borst, K.; Bader, T.K.; Eberhardsteiner, J.
15:00 1417 Development of integrated imaging methods for investigation of micromechanics of dowel connections for engineered wood components
Lederer, W.; Bader, T.K.; Dorn, M.; Muszynski, L.
15:20 1418 Numerical modelling and analysis of the failure behaviour of dowel-type connections in wood
Franke, B.; Franke, S.

MS129-1 **J-HS10**

Isogeometric analysis
Chairperson: R. de Borst

14:00 1420 Finite deformation anisotropic plasticity in isogeometric analysis **(Keynote Lecture)**
Taylor, R.L.; Govindjee, S.
14:30 1421 Domain decomposition methods in isogeometric analysis **(Keynote Lecture)**
Beirao da Veiga, L.; Cho, D.; Pavarino, L.; Scacchi, S.
15:00 1422 Isogeometric analysis for thin-walled structures – beams, plates, shells
Kiendl, J.; Bletzinger, K.; Wüchner, R.; Bazilevs, Y.; Reali, A.
15:20 1423 Experiences with isogeometric simulation of turbine blades for aircraft engines
Großmann, D.; Jüttler, B.; Schlusnus, H.; Barner, J.; Vuong, A.

MS200-1 **J-HS15**

Mesoscopic methods in industrial applications
Chairperson: E. Cueto

14:00 1424 Large scale flow simulation with complex spacer geometry in electrodialysis for sea water desalination
Masilamani, K.; Zudrop, J.; Ibrahim, K.; Johannink, M.; Klimach, H.; Bernsdorf, J.; Mhamdi, A.; Fernandez Sanchis, E.M.; Hauser, A.; Marquardt, W.; Roller, S.P.
14:20 1425 Digital rock physics for special core analysis
De Prisco, G.; Tölke, J.
14:40 1426 RTM permeability prediction using CFD and a GPU acceleration of a lattice Boltzmann solution for sub-grid probability density functions
Bergamasco, L.; Izquierdo, S.; Jimenez, M.A.
15:00 1427 Moment base lattice Boltzmann approach for incompressible two-phase flows with large density ratio
Morinishi, K.; Fukui, T.
15:20 cancelled 1428 Transient flow of buoyant spherical particles in vertical pipes: experiments and Lattice Boltzmann simulations and experimental validation
Monaco, E.

MS204-1 **J-HS13**

Advances in computational methods for gas-liquid two-phase flow
Chairperson: T. Kajishima

14:00 1429 Wave generation and absorption with OpenFOAM
Higuera, P.; L. Lara, J.; Losada, I.J.
14:20 1430 Numerical modelling of wave generation using a two phase model - application to wave overtopping
L. Lara, J.; Maza, M.; Higuera, P.; Barajas, G.; Losada, I.J.
14:40 1431 Numerical study on multiphase flows with compressible effects in converging-diverging nozzle
Jin, M.S.; Ha, C.T.; Park, W.G.
15:00 1432 Numerical study of bubble growth and boiling heat transfer in a free surface jet
Kim, K.; Son, G.; Lee, P.; Oh, S.

MS208-1 **J-UG22**

New trends in numerical methods for multi-material compressible fluid flows
Chairperson: R. Loubere

14:00 1433 Advances of tetrahedral shock hydrodynamics for ALE and multimaterial computations
Scovazzi, G.; Carnes, B.
14:20 1434 Extensions of a two-dimensional discontinuous ALE (DISCALE) finite volume framework on arbitrary unstructured conical meshes
Hoch, P.
14:40 1435 Hydrodynamic applications using ReALE method
Harribey, T.; Breil, J.; Maire, P.; Loubere, R.; Shashkov, M.
15:00 1436 High-order curvilinear ALE hydrodynamics
Anderson, R.; Dobrev, V.A.; Kolev, T.V.; Rieben, R.

MS302-1 **M-HS21**

Computational modelling of smart materials and structures
Chairperson: P. Steinmann

14:00 1437 Two-scale homogenization of electromechanically coupled boundary value problems **(Keynote Lecture)**
Schröder, J.; Keip, M.
14:30 1438 Structural health monitoring based on piezoelectric sensors **(Keynote Lecture)**
Ostachowicz, W.; Kudela, P.; Malinowski, P.; Opoka, S.; Radzieński, M.W.; Skarbek, L.; Wandowski, T.
15:00 1439 Computation of piezoelectrically induced transient stresses without deformation
Krommer, M.; Vetyukov, Y.
15:20 1440 Finite element simulations of poling processes in piezoceramic components taking into account weak electric conductivity
Schwaab, H.; Deluca, M.; Grünbichler, H.; Supancic, P.; Kamlah, M.
15:40 1441 3D phase field simulation of polarization switching in perovskite ferroelectrics
Xu, B.; Müller, R.; Gross, D.

MS402-1 **M-HS42**

Parallel computing and domain decomposition methods
Chairperson: G. Hernandez-Garcia

14:00 1442 The derived-vector space: Unified framework for non-overlapping DDM that includes non-symmetric matrices **(Keynote Lecture)**
Herrera, I.
14:30 1443 Substructuring preconditioners for the mortar method in 3D **(Keynote Lecture)**
Bertoluzza, S.; Pennacchio, M.; Prud'homme, C.; Samake, A.

Monday, September 10, 2012, 14:00 - 16:00

15:00 1444 Total FETI method in engineering problems
Kozubek, T.; Brzobohaty, T.; Markopoulos, A.
15:20 1445 Hybrid TFETI method and its massively parallel implementation
Jarosova, M.; Mensik, M.; Markopoulos, A.

MS500-1 **M-HS47**
Crash and impact simulation
Chairperson: M. Bischoff

14:00 1446 An investigation on failure probabilities in thin-walled aluminium die-castings subjected to quasi-static loading
Knoll, O.; Hopperstad, O.S.; Langseth, M.; Schweizerhof, K.
14:20 1447 Dynamic ductile fracture of cylindrical tubes: modeling and analysis using continuum damage mechanics
Gautam, S.S.; Saxena, R.K.K.; Dixit, P.M.
14:40 1448 Discretization of dynamic contact using singular hybrid mass matrices
Tkachuk, A.; Wohlmuth, B.I.; Bischoff, M.
15:00 1449 Continuum constitutive modeling of woven fabrics
Boljen, M.; Hiermaier, S.
15:20 1450 Characterization and rheological modelling of glass fibre reinforced plastics
Fritsch, J.; Hiermaier, S.
15:40 1451 Development, validation and comparison of occupant models for crash simulations
Franz, U.; Münz, T.; Stahlschmidt, S.; Gromer, A.; Huang,Y.; Schweizerhof, K.

MS501-1 **M-HS30**
Mesh generation and adaptation for industrial applications
Chairpersons: A. Loseille; P. George

14:00 1452 Generation of provably correct curvilinear meshes
Remacle, J.
14:20 1453 High-order curved mesh generation using linear elasticity
Xie, Z.Q.; Sevilla, R.; Hassan, O.; Morgan, K.
14:40 1454 About finite elements of degree 2
Loseille, A.; George, P.
15:00 1455 Boundary layer mesh generation and adaptivity
Loseille, A.
15:20 1456 Anisotropic meshing technique and capture of boundary layers with applications
Coupez, T.; Hachem, E.; Jannoun, G.; Chau, H.; Digonnet, H.
15:40 1457 A new procedure to smooth and untangle meshes on parameterized surfaces
Gargallo-Peiró, A.; Roca, X.; Sarrate, J.

MS606-1 **J-SR62**
Fluid dynamics of compressible flows of substances governed by complex thermodynamic models
Chairperson: A. Guardone

14:00 1458 Nonclassical gasdynamics of vapor mixtures
Casati, E.; Guardone, A.; van der Stelt, T.P.; Colonna, P.
14:20 1459 Boundaries for heat transfer deterioration onset in supercritical pressure channel flows
Urbano, A.; Nasuti, F.
14:40 1460 Instability analysis of an accelerated thin liquid fuel layer under supercritical operating condition of hybrid rocket propulsion
Adachi, M.; Shimada, T.
15:00 1461 Accurate and efficient look-up table approach for dense gas flow simulations
Rinaldi, E.; Pecnik, R.; Colonna, P.
15:20 1462 Numerical experiments on the convergence and reshaping process of cylindrical converging shock fronts in real gases
Vignati, F.; Guardone, A.

MS609 **J-HS16**
Mechanics of thin films and membranes
Chairpersons: A. Eriksson; M. Potier-Ferry

14:00 cancelled 1463 Inflation of elastic membranes in contact with rigid or deformable surfaces
Barsotti, R.; Ligarò, S.S.
14:20 1464 A multi-scale modeling of membrane wrinkling
Potier-Ferry, M.; Hu, H.; Damil, N.
14:40 1465 Finite post-critical deformation of an inflatable anisotropic toroidal membrane
Filippov, S.
15:00 1466 Multi-parametric stability investigations for pressurized thin membranes
Eriksson, A.

MS611-1 **M-HS34**
Inverse problems, design and optimization under uncertainty
Chairperson: G.L. Frontini

14:00 1467 Identification of alloy thermal capacity using the broken line model
Szopa, R.; Mochnacki, B.
14:20 1468 Uncertainties on the inverse source problem for elliptic boundary value problems
Alves, C.J.D.S.; Martins, N.; Colaco, M.; Rainha, M.L.D.S.; Roberty, N.C.
14:40 1469 Estimation of unknown contact resistance by means of reciprocity function approach
Colaco, M.; Alves, C.J.D.S.

MS612-1 **M-HS28**
Uncertainty quantification in computational mechanics and engineering sciences
Chairpersons: C. Soize; W.K. Liu

14:00 1470 Stochastic design of isolation devices for large scale structures **(Keynote Lecture)**
Jensen, H.; Kusanovic, D.; Valdebenito, M.
14:30 1471 Dealing with scarce information on engineering systems **(Keynote Lecture)**
de Angelis, M.; Patelli, E.; Beer, M.
15:00 1472 Reliability analysis of linear dynamical systems with uncertain structural parameters subject to discrete white noise excitation
Valdebenito, M.; Jensen, H.; Schuëller, G.I.; Labarca, A.A.
15:20 1473 Non-intrusive sparse moving least squares applied to structural optimization under uncertainty
Lebon, J.; Filomeno Coelho, R.; Breitkopf, P.; Villon, P.
15:40 1474 A novel joint diagonalization approach for linear stochastic systems and reliability analysis
Li, C.; Wang, F.; Feng, J.; Owen, D.

Monday, September 10, 2012, 14:00 - 16:00

MS622-1 **J-HS18**

Multiscale and multiphysics modelling for complex materials
Chairperson: B. Schrefler

14:00 1475 Fundamental issues in multiscale modeling of damage in composite materials **(Keynote Lecture)**
Talreja, R.

14:30 1476 A solution to the parameter-identification conundrum: multi-scale interaction potentials **(Keynote Lecture)**
van Mier, J.G.M.

15:00 1477 Theoretical modeling and analysis of mode II cracks in compact shear specimens
Petrova, V.; Sadowski, T.

15:20 1478 Experimental and numerical analysis of the tensile test of aluminium welded sampels
Lacki, P.; Adamus, J.; Sadowski, T.; Wojsyk, K.; Kneć, M.

15:40 1479 Modeling and simulation of dynamic debonding propagation in sandwich plates
Burlayenko, V.N.; Sadowski, T.

MS623-1 **J-SR64**

Computational modeling of bone and cartilage
Chairpersons: P. Pivonka; P.R. Buenzli

14:00 1480 Mechanical systems biology in bone
Webster, D.; Trüssel, A.; Müller, R.

14:20 1481 Modeling and simulating bone adaptation to mechanical loading
Shefelbine, S.; Pereira, A.

14:40 1482 Exploring the effects of different walking strategies on bone remodelling mechanisms
Fernandez, J.; Besier, T.; Pivonka, P.; Hunter, P.

15:00 1483 Simulation of the pharmaceutical intervention of postmenopausal osteoporosis by means of a computational approach
Scheiner, S.; Pivonka, P.; Smith, D.W.; Dunstan, C.

15:20 1484 A mechanical description of multiphase fractional-order hereditary materials
Di Paola, M.; Pinnola, F.P.; Zingales, M.

15:40 1485 Influence of spatial variation of fibre orientation on abnormal cartilage stress distribution in ACL deficient knees
Shim, V.B.; Hunter, P.; Fernandez, J.

MS626-1 **M-HS46**

Multiphysics simulation: Modeling, solution methods and applications
Chairperson: C.A. Felippa

14:00 1486 Coupled analysis of MEMS devices and electro-active hydrogels based on finite-deformation beam theory **(Keynote Lecture)**
Sokolov, I.; Krylov, S.; Harari, I.

14:30 1487 Model reduction for fluid structure interaction problems **(Keynote Lecture)**
Gervasio, P.; Quarteroni, A.

15:00 1488 Virtual control method for multiphysics
Discacciati, M.; Gervasio, P.; Quarteroni, A.

15:20 1489 Simulating non-stationary fluid-structure interaction
cancelled **Iakovlev, S.; Santos, H.; Williston, K.**

15:40 1490 Monolithic approach of Stokes-Darcy coupling for the simulation of liquid infusion process
Abouorm, L.; Drapier, S.; Bruchon, J.; Moulin, N.

MS628-1 **M-HS31**

Mechanics of moving materials, dynamics and stability
Chairperson: N. Banichuk

14:00 1491 On coupling of multiphysics models under uncertainty guided by data
Hoffman, J.

14:20 1492 Vibration and bifurcation of a moving string loaded by steady aerodynamic forces
Wang, Y.; Lu, L.; Huang, L.

14:40 1493 A comparison of two 2D potential flow models for fluid-structure interaction of a moving panel
Jeronen, J.

15:00 1494 On the motion of continua with non-material boundary conditions - an investigation with one-dimensional examples
Franze, A.

15:20 1495 Effect of gravity on stability of an axially moving band
Neittaanmäki, P.; Tirronen, M.; Tuovinen, T.; Saksa, T.; Jeronen, J.

15:40 1496 On stability of axially moving orthotropic membranes and plates
Saksa, T.; Tuovinen, T.; Banichuk, N.; Kurki, M.

MS641-1 **M-HS23**

Microstructure-based modeling of plasticity
Chairperson: S. Sandfeld

14:00 1497 Crystal plasticity simulations using discrete Fourier transforms
Kalidindi, S.R.; Yabansu, Y.C.; Al-Harbi, H.F.

14:20 1498 On the role of dislocation interactions in dislocation based strain gradient crystal plasticity models
Dogge, M.; Peerlings, R.; Geers, M.

14:40 1499 Crystal plasticity size effects for a plastic inclusion
Kords, C.; Eisenlohr, P.; Roters, F.

15:00 1500 Three-dimensional continuum dislocation microplasticity FE-simulation
Wulfinghoff, S.; Böhlke, T.

15:20 1501 A Runge-Kutta discontinuous Galerkin approach with application to the continuum dislocation system
Thawinan, E.; Wieners, C.

15:40 1502 Study of dislocation – notch interaction using the AtoDis multiscale model
Brinckmann, S.; Mahajan, D.; Hartmaier, A.

MS646-1 **J-UG21**

Computational models for soft tissues
Chairpersons: E. Peña; R. Natal Jorge

14:00 1503 A 3D generalized micro-sphere-based remodeling approach
Saez, P.; Peña, E.; Martinez, M.A.

14:20 1504 Remodelling in statistical fibre-reinforced composites
Grillo, A.S.; Wittum, G.; Tomic, A.; Federico, S.

14:40 1505 Anisotropic density growth of bone - a computational micro-sphere approach
Waffenschmidt, T.; Menzel, A.; Kuhl, E.

15:00 1506 Histo-mechanical modeling of the active vascular wall
Gasser, T.C.

15:20 1507 Microstructural constitutive model of inelastic effects in soft fibred tissues
Peña, E.; Saez, P.; Martinez, M.A.

15:40 1508 Viscoelastic behavior of the cornea
Ramirez, F.; Tellez, J.F.; Arciniegas, A.; Guzman, A.F.

Monday, September 10, 2012, 14:00 - 16:00

MS654-1 **M-HS50**

Computational methods in modern railway design
Chairperson: M. Seitzberger

14:00 1509 New approaches for modeling the wheel-rail contact
Rosenberger, M.; Six, K.; Marte, C.; Tomberger, C.; Dietmaier, P.

14:20 1510 Computational method for dynamic interaction of high speed train and railway structure including post- derailment during an earthquake
Tanabe, M.

14:40 1511 Comparison between CFD and wind tunnel measurements of a roof mounted air ventilated equipment in a high speed train
Ali, I.; Rüter, A.; Bahl, B.

15:00 1512 On the application of CFD in fire safety - between theory and practice or the user's role
Münch, M.

15:20 1513 Simulation of fire phenoma in rolling stock – applicability and limitations
Murtinger, G.

15:40 1514 Multiscale computational design of large scale corrugated core sandwich structures
Skrna-Jakl, I.C.; Pahr, D.H.; Rammerstorfer, F.G.

MS660-1 **J-HS12**

Computational methods in control
Chairperson: T. Meurer

14:00 1515 A constructive interior penalty method for optimal control problems with state and input constraints
Malisani, P.; Chaplais, F.; Petit, N.

14:20 1516 Dual decomposition of optimal control problems with coupled nonlinear dynamics
Hentzelt, S.; Graichen, K.

14:40 1517 Regularization procedures in optimal control
Trélat, E.; Haberkorn, T.

15:00 1518 Computing reachable sets via barrier methods on SIMD architectures
Grüne, L.; Jahn, T.

15:20 cancelled 1519 Coupled boundary optimal control problems in thermal fluid dynamics with lifting function approach and Vanka-type solvers
Bornia, G.; Manservisi, S.

MS661-1 **J-SR20**

Numerical methods and applications of multi-physics in biomechanical modeling
Chairperson: A. Figueroa

14:00 1520 Simulation of prosthetic heart valve damage evolution using a micro-mesoscale structural constitutive damage model **(Keynote Lecture)**
Sacks, M.

14:30 NEW 1520a A new three-field stabilized finite element method for fluid–structure interactions **(Keynote Lecture)**
Hachem, E.; Codina, R.; Coupez, T.

14:30 moved to MS661-6 1521 Branched models complex flow: a modular multiscale coupling that handles backflow **(Keynote Lecture)**
Vignon-Clementel, I.E.; Esmaily Moghadam, M.; Figliola, R.; Marsden, A.L.

15:00 1522 Computational models of drug eluting stents for arterial bifurcations
Cattaneo, L.; Chiastra, C.; Cutrí, E.; Migliavacca, F.; Morlacchi, S.; Zunino, P.

15:20 1523 A computational model of thrombus development in aneurysms
Ngoepe, M.N.; Bowker, T.; Ventikos, Y.

15:40 1524 Cardiac fluid-solid mechanics with Lagrange multipliers
Nordsletten, D.; McCormick, M.; Smith, N.; Kay, D.

STS02 **M-HS07**

Reporting the VKI lecture series on optimization methods and tools for multi physics design in aeronautics and turbomachinery
Chairpersons: J. Periaux; T. Verstraete

14:00 1525 Surrogate modeling and adaptive sampling techniques
Dwight, R.P.; de Baar, J.H.S.; Azijli, I.

14:20 moved to MS651-2 1526 Differentiable shape optimization: summary of a lecture at the Von Karman Institute, May 2012.
Pironneau, O.

14:40 1527 Adjoint approaches in aerodynamic shape optimization and MDO context
Gauger, N.R.

15:00 1528 Multidisciplinary optimization of turbomachinery components using differential evolution
Verstraete, T.

15:20 1529 Design in aeronautics using hybridization techniques with evolutionary optimization, hardware, games and smart materials
Gonzalez, L.F.; Periaux, J.; Lee, D.S.; Kok, J.

TS005 **J-SR63**

Computational aero-acoustics
Chairperson: S. Jakirlic

14:00 1530 Aeroacoustic investigation of an airfoil using a stabilized mixed finite element scheme
Hüppe, A.; De Gennaro, M.; Kaltenbacher, M.; Kühnelt, H.

14:20 1531 Source of acoustic waves from a supersonic jet impinging on an inclined flat plate with various plate angle
Nonomura, T.; Morizawa, S.; Honda, H.; Yamamoto, M.; Obayashi, S.; Fujii, K.

14:40 1532 Numerical validation of an acoustic imaging method for duct spinning mode with in-duct circular microphone array
Huang, X.

15:00 1533 High-order shifted Laplace preconditioners for wave equations
Zangre, I.; Antoine, X.; Geuzaine, C.

15:20 1534 Investigation of noise radiated by a subsonic jet using a non-conservative implicit large-eddy simulation method
Moser, C.A.S.; Medeiros, M.F.

15:40 1535 Zonal large eddy simulation for numerical prediction of the acoustic performance of an axial fan
De Gennaro, M.; Zanon, A.; Kühnelt, H.; Giannattasio, P.

TS012-1 **J-HS11**

Computational fluid mechanics
Chairperson: W.A. Wall

14:00 1536 Mixing of electrokinetically-driven power-law fluids in a microchannel with rectangular blocks
Chen, C.; Cho, C.

14:20 1537 Numerical investigation into mixed electroosmotic flow and pressure-driven flow in microchannels with wavy surfaces
Cho, C.; Chang, Y.; Chang, Y.

14:40 1538 Proper choice of model for turbulence treatment while research on flow in large-scale CFD-domains
Muhasilovic, M.D.; Vela, I.; Trobok, Z.; Petrovic, A.; Mededovic, A.; Gacanin, E.

15:00 1539 High-fidelity marine propeller analysis using LES with an immersed boundary method
Schröder, S.; Balaras, E.; Beratlis, N.

15:20 1540 Large eddy simulation of turbulent flows on 3D hybrid unstructured meshes
Tsoutsanis, P.; Drikakis, D.; Lelieveld, J.

15:40 1541 Numerical investigations of 3D transitional and turbulent boundary layers with heat transfer
Kielczewski, K.; Tuliszka-Sznitko, E.

Monday, September 10, 2012, 14:00 - 16:00

TS025-1 **M-HS16**

Computational solid and structural mechanics
Chairperson: G. Meschke

14:00	1542	Numerical challenges of capturing membrane action in reinforced concrete beams and one-way slabs **Farhang Vesali, N.; Valipour, H.R.; Samali, B.**
14:20	1543	A numerical model in precasting segment of an immersed tunnel **Luo, Y.; Yuan, Y.**
14:40	1544	Ultimate capacity of reinforced concrete sections under fire conditions **Barros, H.F.; Ferreira, C.C.; Real, P.V.**
15:00	1545	Bayesian state estimation for on line assessment and prognosis of fatigue damage in composite materials **Chiachio Ruano, J.; Chiachio Ruano, M.; Beck, J.L.; Rus Carlborg, G.**
15:20	1546	Design and simulation of an autonomous underwater vehicle **Ridolfi, A.; Allotta, B.; Costanzi, R.; Pugi, L.; Vettori, G.**

TS034-1 **J-HS14**

LES, DNS and hybrid RANS/LES methods
Chairperson: H. Pitsch

14:00	1547	Hybrid RANS/LES, PANS and PRNS computations of plane impinging jets **Kubacki, S.; Rokicki, J.; Dick, E.**
14:20	1548	Unsteady simulations of flow and heat transfer in a plane turbulent impinging jet using URANS, DES and LES **Dutta, R.; Dewan, A.; Srinivasan, B.**
14:40	1549	Hybrid RANS-LES simulations of turbulent flows using high-order methods **Marin Perez, R.; Cinnella, P.; Gloerfelt, X.**
15:00	1550	On the estimation of the subgrid scale model coefficents in large eddy simulation **Ghorbaniasl, G.; Agnihotri, V.; Lacor, C.**
15:20	1551	On a consistent, scale-truncation model for large eddy simulation **Verstappen, R.W.C.P.**

TS035-1 **M-HS32**

Meshless and wavelet methods
Chairperson: J. Sladek

14:00	1552	Influence of the nodal distribution on element-free Galerkin accuracy in a topology optimization context **Overvelde, J.T.B.; Langelaar, M.; van Keulen, F.**
14:20	1553	Coherent vorticity simulation of three-dimensional forced homogeneous isotropic turbulence using orthogonal wavelets **Okamoto, N.; Yoshimatsu, K.; Schneider, K.; Farge, M.; Kaneda, Y.**
14:40	1554	Instationary SPH simulations of non-Newtonian fluid flow **Stein, A.; Wünsch, O.; Rütten, M.; Künemund, J.; Saalfeld, S.**
15:00	1555	On the use of inflow/outflow boundary conditions in incompressible, internal flow problems using smoothed particle hydrodynamics **Khorasanizade, S.; Pinto, J.; Sousa, J.**
15:20 cancelled	1556	Numerical modeling of two impermeable coastal structures using smoothed particle hydrodynamics **Didier, E.; Neves, D.; Martins, R.; Neves, M.D.G.**
15:40	1557	On the effectiveness of the bypass explosion valve **Polandov, Y.H.; Barg, M.; Babankov, V.**

TS043-1 **J-HS17**

Numerical methods and convergence acceleration in CFD
Chairperson: M. Visonneau

14:00	1558	Hierarchy of preconditioning techniques for the solution of the Navier-Stokes equations discretized by 2nd order unstructured finite volume methods **Langer, S.**
14:20	1559	Convergence acceleration of the iterative algorithms for the Navier-Stokes equations **Martynenko, S.I.**
14:40	1560	Analysis of a fast iterative method in a dual time algorithm for the Navier-Stokes equations **Swanson, R.C.; Turkel, E.**
15:00	1561	Incompressible flow simulations using enhanced divergence-free elements and geometric multigrid **Neckel, T.; Zenger, C.**
15:20	1562	Stabilized discontinuous finite element formulation for fourth-order incompressible flow problems on distorted meshes **Cruz, A.G.B.; Carmo, E.; Duda, F.**

16:00 - 16:30

Coffee Break

Monday, September 10, 2012, 16:30 - 18:30

16:30 - 18:30

MS107-2 **J-SR10**

Multiscale modelling of materials and structures
Chairperson: M. Pietrzyk

16:30 1700 Damage amplification due to singularly interacting nearby microcracks and pores under pressure
Markenscoff, X.; Dascalu, C.

16:50 cancelled 1701 Arlequin framework for rotating machinery applications: a space/time multi-model/multiscale approach
Ghanem, A.; Baranger, T.; Torkhani, M.

17:10 1702 Sensitivity study for closure of real void relative to macroscopic mechanical loadings, using finite element simulations at meso-scale
Saby, M.; Bernacki, M.; Roux, E.; Brzuchacz, S.; Bouchard, P.

17:30 1703 Boundary element method modelling of nanocomposites
Ptaszny, J.; Dziatkiewicz, G.; Fedelinski, P.

17:50 1704 Two-scale modeling of reactive powder concrete by the method of numerical homogenization
Denisiewicz, A.; Kuczma, M.

MS108-2 **M-Elise Richter**

Modeling of diffuse and discontinuous failure of solids
Chairperson: C. Miehe

16:30 1705 Numerical simulation of 3-D crack propagation in ferroelectric polycrystals: effect of combined toughening mechanisms
Abdollahi, A.; Arias, I.

16:50 1706 An alternative method for simulation of 2D discrete dislocations
Ng, W.S.K.; van Zwieten, G.; Verhoosel, C.V.; Gutierrez, M.

17:10 1707 A geometric bridge between regularised damage and energetically equivalent cracks
Tamayo-Mas, E.; Rodríguez-Ferran, A.

17:30 1708 Discrete element simulation of damageable elastoplastic materials
Terreros, I.; Iordanoff, I.; Charles, J.

17:50 1709 Macro – micro structures modeling of material failure in high performance fiber reinforced cementitious composites
Mora, D.F.; Huespe, A.; Oliver, X.

18:10 2701 Finite elements with non homogeneous embedded discontinuities
Contrafatto, L.; Cuomo, M.; Di Venti, G.T.

Dynamics of nonlinear structures with contact interfaces
Chairperson: E. Petrov

16:30 1710 Multiharmonic balance analysis of a jointed friction oscillator
Süß, D.; Willner, K.

16:50 1711 Developement of a contact model for an electric motor lamination stack
Luchscheider, V.; Willner, K.; Maidorn, M.

17:10 1712 Evaluation of numerical uncertainties on the modeling of dry masonry structures submitted to out-of-plane loading, using the NSCD method in comparison with experimental tests
Taforel, P.; Dubois, F.; Pagano, S.

MS128-2 **M-HS41**

Computational material modeling of wood and wood products
Chairperson: E. Serrano

16:30 1713 Deformation analysis of wood-composites with changing properties of glue-line
Olenska, S.; Roszkowski, M.; Beer, P.J.

16:50 1714 Macro-scale modeling of industrial packaging processes of folding by means of finite element method
Giampieri, A.; Mameli, A.; Borsari, R.

17:10 1715 Local concentration of stresses as a result of the notch in different positions along the bottom surface of bending solid timber beam with FEM
Burawska, I.; Tomusiak, A.; Beer, P.J.

17:30 1716 Characterization of clear wood by a single specimen: evaluation of first results and further improvements
Majano-Majano, A.; Fernandez-Cabo, J.L.; Xavier, J.

MS129-2 **J-HS10**

Isogeometric analysis
Chairperson: A. Reali

16:30 1717 Graph grammar based parallel direct solver for 1D and 2D isogeometric finite element method
Paszynski, M.; Kuznik, K.; Calo, V.M.

16:50 1718 Isogeometric analysis of viscous drop deformation in shear flow
Ahmadi Joneidi, A.; Verhoosel, C.V.; Anderson, P.D.

17:10 1719 An assessment of isogeometric analysis for a model singular perturbation problem
Kumar, M.; Kvamsdal, T.

17:30 1720 The effect of higher-continuous basis functions on solver performance
Collier, N.; Pardo, D.; Dalcin, L.; Paszynski, M.; Calo, V.M.

17:50 1721 Locking free isogeometric analysis of curved thick beams
Bouclier, R.; Elguedj, T.; Combescure, A.

18:10 1722 Topological shape optimization of elastic structures using level sets and isogeometric approach
Ahn, S.; Lee, S.; Yoon, M.; Cho, S.

MS200-2 **J-HS15**

Mesoscopic methods in industrial applications
Chairperson: S. Izquierdo

16:30 1723 Solution to industry benchmark problems with the Lattice-Boltzmann code XFlow
Holman, D.M.; Brionnaud, R.

16:50 1724 Local maximum entropy particle based hydrodynamics
Hartmann, D.

17:10 1725 Hierarchy of stochastic gas dynamic models
Gudich, I.

17:30 1726 Study on highly efficient numerical simulation of flow using thirteen velocity quasi-equilibrium lattice Boltzmann model
Yasuda, T.; Hashimoto, T.; Tanno, I.; Tanaka, Y.; Minagawa, H.; Morinishi, K.; Satofuka, N.

MS204-2 **J-HS13**

Advances in computational methods for gas-liquid two-phase flow
Chairperson: T. Kajishima

16:30 1727 Towards the simulation of dynamic wetting processes
Klitz, M.; Griebel, M.

16:50 cancelled 1728 Numerical simulation of deformation of a droplet in a stationary electric field using DG-FEM
Emamy, N.; Mousavi, R.; Kummer, F.; Oberlack, M.

17:10 1729 A positivity-preserving upwind scheme for air-droplet two-phase flow in aircraft icing
Myong, R.S.; Jung, S.K.

17:30 1730 Application of the volume-of-fluid method to the free-surface flow in single-screw extruders
Lübke, M.; Wünsch, O.

Monday, September 10, 2012, 16:30 - 18:30

MS208-2 **J-UG22**

New trends in numerical methods for multi-material compressible fluid flows
Chairperson: R. Loubere

16:30 1731 A discontinuous Galerkin method for two-dimensional high-order Lagrangian hydrodynamics on general unstructured Bezier grids
Vilar, F.; Maire, P.; Abgrall, R.

16:50 1732 A second-order cell-centered finite volume scheme for anisotropic diffusion on three-dimensional unstructured moving meshes
Jacq, P.; Maire, P.; Claudel, J.; Abgrall, R.

17:10 1733 A nominally second-order cell-centered Lagrangian scheme for the simulation of elastic-plastic solids in cylindrical geometry
Maire, P.; Breil, J.; Loubere, R.

17:30 1734 A high order dual grid Lagrangian Godunov scheme with a consistent nodal and element Reimann solver
Barlow, A.J.

17:50 1735 On edge-based approach to cell-centered Lagrangian hydrodynamics
Sambasivan, S.K.; Christon, M.A.; Loubere, R.; Shashkov, M.

18:10 1736 A finite volume Lagrangian cell centered mimetic approach for computing elasto-plastic deformation of solids in general unstructured grids
Sambasivan, S.K.; Loubere, R.; Shashkov, M.

MS302-2 **M-HS21**

Computational modelling of smart materials and structures
Chairperson: M. Krommer

16:30 1737 Octet-truss lattice materials made of shape memory alloy
Kuczma, M.

16:50 1738 Comparison between two one-dimensional constitutive models for shape memory alloy wires used in anti-seismic applications
Chiozzi, A.; Merlin, M.; Rizzoni, R.; Tralli, A.

17:10 1739 Inverse motion problem and configurational forces for electro-active polymers
Denzer, R.; Ask, A.; Menzel, A.; Ristinmaa, M.

17:30 1740 Nonlinear piezoelectric model based on switching processes and its finite element formulation
Kaltenbacher, M.; Nicolai, M.; Kaltenbacher, B.; Schönecker, A.

17:50 1741 Identification of structural resonance peaks using E/MI method
Opoka, S.; Skarbek, L.; Wandowski, T.; Malinowski, P.; Ostachowicz, W.

18:10 1742 A reduced order finite element model for structural-acoustic vibration damping using piezoelectric shunt techniques
Deü, J.; Larbi, W.; Ohayon, R.

MS402-2 **M-HS42**

Parallel computing and domain decomposition methods
Chairperson: I. Herrera

16:30 1743 DDM applied to subsurface flow and transport
Hernandez-Garcia, G.

16:50 1744 Efficient implementation of the TFETI coarse problem
Hapla, V.; Horak, D.; Merta, M.; Jakl, O.

17:10 1745 Spectral coarse spaces for robust two- and multi-level methods
Willems, J.

17:30 1746 A two-scale approximation of the Schur complement with application to non-intrusive coupling
Gosselet, P.; Allix, O.; Gendre, L.; Guguin, G.

17:50 1747 A crossbred multi-parallel method for accelerating multiscale computations in a chemical reactor analysis
Cheimarios, N.; Aviziotis, I.; Kokkoris, G.; Boudouvis, A.G.

MS500-2 **M-HS47**

Crash and impact simulation
Chairperson: M. Bischoff

16:30 1748 Energy absorption of braided structures and their numerical analysis
Matheis, R.

16:50 1749 Structural analysis of a body in white for battery integration using finite element and macro element with the focus on pole crash optimization
Luttenberger, P.

17:10 1750 Recent developments in joint modeling for crash simulations
Sommer, S.; Burget, S.; Bier, M.

MS501-2 **M-HS30**

Mesh generation and adaptation for industrial applications
Chairperson: A. Loseille

16:30 1751 TUM.GeoFrame: automated generation of conforming hexahedral meshes for thin-walled shell-like structures
Frischmann, F.; Sorger, C.; Kollmannsberger, S.; Rank, E.

16:50 1752 Unstructured mesh generation using advancing layers and metric based transition for viscous flowfields
Marcum, D.; Alauzet, F.; Maréchal, L.

17:10 1752a NEW Improved mesh morphing based on radial basis functions
Saalfeld, B.; Rütten, M.; Künemund, J.; Saalfeld, S.

MS605-1 **J-HS16**

Computational design of functional thin films
Chairpersons: D. Holec; P.H. Mayrhofer

16:30 1753 Quantum mechanically guided design of RuO_2 based nanorods **(Keynote Lecture)**
Music, D.; Basse, F.H.; Schneider, J.M.

17:00 1754 Ab initio study of epitaxy-induced stressed states **(Keynote Lecture)**
Friak, M.; Neugebauer, J.; Raabe, D.; Schindlmayr, A.; Scheffler, M.; Sob, M.

17:30 1755 Ab initio modelling of interfaces: TiO_2 grown on Al_2O_3
Popov, M.N.; Spitaler, J.; Mühlbacher, M.; Walter, C.; Keckes, J.; Mitterer, C.; Ambrosch-Draxl, C.

17:50 1756 Ab-initio calculations of the interface between TiNiSn thin films and Si, Cu, or Ni for thermoelectric applications
Wunderlich, W.

MS606-2 **J-SR62**

Fluid dynamics of compressible flows of substances governed by complex thermodynamic models
Chairperson: A. Guardone

16:30 1757 Axisymmetric calculation of dense gas flows in ORC turbines
Persico, G.; Pini, M.; Dossena, V.

16:50 1758 Flow measurements in a Ludwieg tube type set-up for the experimental investigation of rarefaction shock waves: status report
Mathijssen, T.; Gallo, M.; Casati, E.; Colonna, P.

17:10 1759 Design, construction and commissioning of a test rig for organic vapours
Spinelli, A.; Pini, M.; Dossena, V.; Gaetani, P.; Casella, F.

17:30 1760 Recent developments and future challenges in compressible flows of substances governed by complex thermodynamic models
Guardone, A.

Monday, September 10, 2012, 16:30 - 18:30

MS611-2 **M-HS34**

Inverse problems, design and optimization under uncertainty
Chairperson: M. Colaco

16:30 1761 Shape optimization of thermoelastic fields for mean compliance minimization
Katamine, E.; Yoshioka, H.

16:50 1762 Uncertainty quantification using nonparametric quantile estimation and metamodeling
Rhein, B.; Clees, T.; Ruschitzka, M.

17:10 1763 Identification of ultrasonic properties of layered materials
Messineo, M.G.; Frontini, G.L.; Gaete Garretón, L.

MS612-2 **M-HS28**

Uncertainty quantification in computational mechanics and engineering sciences
Chairperson: H. Jensen

16:30 1764 The discrete L^2 projection on polynomial spaces with random evaluations: applications to stochastic PDEs
Migliorati, G.; Nobile, F.; von Schwerin, E.; Tempone, R.

16:50 1765 Influence of the track geometry variability on the train behavior
Perrin, G.; Soize, C.; Duhamel, D.; Funfschilling, C.

17:10 1766 Construction of polynomial chaos expansion for uncertain material parameters from limited experimental data
Sepahvand, K.; Marburg, S.

17:30 1767 Robust design optimization by hybrid dimension reduction method
cancelled **Li, H.; Ma, C.**

17:50 1768 Identification of an elasticity-tensor random field at mesoscopic scale using experimental measurements at mesoscopic and macroscopic scales for complex hierarchical microstructures
Nguyen, M.T.; Desceliers, C.; Soize, C.

MS622-2 **J-HS18**

Multiscale and multiphysics modelling for complex materials
Chairperson: R. de Borst

16:30 1769 Criterion for predicting direction of the crack in composites with random structure
Podgórski, J.

16:50 1770 Response of two- and three-layer composite beams with interlayer slip and damaging interfaces
Campi, F.; Monetto, I.

17:10 1771 Numerical and experimental studies of adhesively bonded steel-concrete composite beams
Kuczma, B.; Kuczma, M.

17:30 1772 Yield strength of rocks from microtomography and the upscaling using percolation theory
Liu, J.; Freij-Ayoub, R.; Karrech, A.; Clennell, B.; Regenauer-Lieb, K.

17:50 1773 Simulation of disc cutting tool operation on stratified rocks
Jonak, J.; Podgórski, J.

MS623-2 **J-SR64**

Computational modeling of bone and cartilage
Chairpersons: J. Fernandez; S. Scheiner

16:30 1774 Bone refilling in basic multicellular units: theoretical insights into experimental data
Buenzli, P.R.; Pivonka, P.; Smith, D.W.

16:50 1775 Strain amplification in bone mechanobiology: an investigation of the in vivo mechanical environment of osteocytes
Verbruggen, S.W.; Vaughan, T.J.; McNamara, L.M.

17:10 1776 Mathematical model of transduction of bone signals by osteocytes
Hambli, R.

17:30 1777 Finite element determination of the lacunar-canalicular permeability of bone, implications in bone
Lemonnier, S.; Naili, S.; Lemaire, T.

17:50 1778 Morphological analysis of osteocytes (lacunae) by using SR-Radiation CT and the finite element method
Ritter, Z.; Staude, A.; Prohaska, S.; Felsenberg, D.

MS626-2 **M-HS46**

Multiphysics simulation: Modeling, solution methods and applications
Chairperson: R. Ohayon

16:30 1779 A variational, FIC-based formulation for particle finite element methods: spectral and dynamic analysis for incompressible fluid-structure interaction
Felippa, C.A.; Oñate, E.; Idelsohn, S.R.

16:50 1780 Multiscale time integration of dissipative thermodynamics with energy-momentum consistent time finite element methods
Groß, M.M.

17:10 1781 Prediction of particle distribution on wall in magnetic separation
Inaba, T.; Sakazume, T.; Yamashita, Y.; Matsuoka, S.

17:30 1782 Numerical simulation of a chemical thermal storage device with coupled reactive heat and mass transport processes
Shao, H.; Watababe, N.; Singh, A.K.; Linder, M.; Kolditz, O.

17:50 1783 Numerical modelling and simulations of two-phase electrohydrodynamics flows
Nguyen, V.

18:10 1784 Two approaches for heat transfer simulation of current carrying multicables
Loos, F.; Dvorsky, K.; Ließ, H.

MS628-2 **M-HS31**

Mechanics of moving materials, dynamics and stability
Chairperson: P. Neittaanmäki

16:30 1785 Instability and fracture conditions in mechanics of axially moving webs
Banichuk, N.; Saksa, T.; Tuovinen, T.

16:50 1786 A study on optimal conditions for a travelling web system subject to instability and fracture
Saksa, T.; Banichuk, N.; Neittaanmäki, P.

17:10 1787 Effect of printing nips on web tension formation in offset printing
Sorvari, J.; Parola, M.

17:30 1788 Strain field theory for two-dimensional, viscoelastic continuous high-speed webs with plane strain behavior
Kurki, M.; Jeronen, J.; Saksa, T.; Tuovinen, T.

MS641-2 **M-HS23**

Microstructure-based modeling of plasticity
Chairperson: S. Sandfeld

16:30 1789 Effect of heterogeneous friction stress on the macroscopic behavior of magnesium single crystal
Liu, T.; Groh, S.

16:50 1790 In-grain orientation spread evolution in polycrystalline aluminium submitted to large strains
Quey, R.; Driver, J.H.; Dawson, P.R.

17:10 1791 3D image-based microstructure reconstruction for multi-phase materials
Kim, J.H.; Kim, D.; Lee, M.

17:30 1792 Numerical solution of visco-plastic model of a ultrafine structure formation induced by high pressure torsion
Hron, J.; Minakowski, P.; Kratochvil, J.; Malek, J.; Kruzik, M.

Monday, September 10, 2012, 16:30 - 18:30

MS646-2 **J-UG21**

Computational models for soft tissues
Chairpersons: M.A. Martinez

16:30 1793 A computational model of the facial soft tissues
Martínez-Reina, J.; Gutiérrez, J.M.; Suárez, C.; Gómez-Cía, T.; Domínguez, J.

16:50 cancelled 1794 Male urethra under large deformations
Martins, P.S.; Natal-Jorge, R.M.; Gomes, M.J.; Versos, R.S.; Santos, A.

17:10 1795 A finite element model for simulating skeletal muscle hypertrophy
Grasa, J.; Calvo, B.

17:30 1796 Numerical modelling of skeletal muscle tissue. Application to human abdominal cavity
Hernández Gascón, B.; Grasa, J.; Calvo, B.

17:50 1797 A numerical study on the fetus head molding and its influence on the biomechanical behavior of the pelvic floor during vaginal delivery
Parente, M.P.L.; Teixeira da Silva, M.; Natal Jorge, R.M.; Fernandes, A.A.; Mascarenhas, T.

18:10 1798 Thermal analysis of the human foot through numerical simulation of mass and energy transfer models
Durany, J.; Poceiro, L.; Varas, F.

MS654-2 **M-HS50**

Computational methods in modern railway design
Chairperson: T. Flatscher

16:30 1799 Validation of rail equipment crashworthiness computer simulation models
Tyrell, D.C.

16:50 1800 On the crashworthiness performance of commuter trains complying with the FRA guidelines for alternatively-designed rail equipment
Starlinger, A.; Castelli, B.; Good, T.

17:10 1801 Crashworthy design of the last Alstom regional train
Le Corre, D.

17:30 1802 Main developments on Talgo Series 8 to transform European coaches on US DOT/FRA compliant plus energy absorption capacity under North American collision scenarios
Vicente Corral, M.T.; López Bonaque, A.; Mellado Valle, F.; Moñino, M.Á.

17:50 1803 Sensitivity of the fatigue life of welded components regarding variations of the seam geometry
Hofwimmer, K.; Soproni, I.; Fleischer, H.

MS660-2 **J-HS12**

Computational methods in control
Chairperson: T. Meurer

16:30 1804 Finite element based trajectory planning for distributed-parameter thermal systems
Meurer, T.

16:50 1805 Approximate feedforward control design for flexible multibody systems using singular perturbed models
Gorius, T.; Seifried, R.; Eberhard, P.

17:10 1806 Computational model of a direct-fired continuous strip annealing furnace for simulation, control, and optimization
Strommer, S.; Niederer, M.; Steinböck, A.; Kugi, A.

MS661-2 **J-SR20**

Numerical methods and applications of multi-physics in biomechanical modeling
Chairperson: D. Nordsletten

16:30 1807 Patient specific blood-flow simulations in vascular districts
Deparis, S.; Bonnemain, J.

16:50 1808 Multi-level acceleration of strongly coupled problems with incompressible flow
van Zuijlen, A.H.; Bijl, H.

17:10 1809 Non-Newtonian blood flow and aggregation of RBC
Murali, C.; Nithiarasu, P.

17:30 1810 Inverse method to include prestress into image-based geometries of the arterial wall
Bols, J.; Degroote, J.; Trachet, B.; Verhegghe, B.; Segers, P.; Vierendeels, J.

17:50 1811 Model-based identification of motion sensor placement for tracking propulsion and elongation of the tongue
Wang, Y.K.; Nash, M.; Röhrle, O.

18:10 1812 Multiphysics computational models for cardiac flow and virtual cardiography
Mittal, R.; Seo, J.H.; Vedula, V.

STS04 **M-HS07**

Turbulent and transitional boundary layer interaction with a shock wave - UFAST and TFAST projects
Chairperson: P. Doerffer

16:30 1813 Experimental and numerical investigation of unsteady shock wave / boundary layer interaction and its control
Barakos, G.; Bur, R.

16:50 1814 Feedback effects and stochastic forcing response of the t ransonic buffet around an airfoil including trailing-edge-plate at high Reynolds
Braza, M.; Szubert, D.; Grossi, F.; Jimenez-Garcia, A.; Guibert, V.; Hoarau, Y.; Saintlos, S.; Hunt, J.

17:10 1815 Stability and modal analysis of shock/boundary layer interactions
Pirozzoli, S.; Bernardini, M.; Nichols, J.W.; Larsson, J.

17:30 1816 Unsteady normal shock wave: lessons learned from UFAST project
Tartinville, B.; Hirsch, C.

17:50 1817 Transition location effect on shock wave boundary layer interaction
Doerffer, P.

TS012-2 **J-HS11**

Computational fluid mechanics
Chairperson: N. Kroll

16:30 1818 Formation flight aerodynamics of oblique flying wing type aircrafts
Rütten, M.; Trenker, M.; Rosemann, H.

16:50 1819 Fluid and motion coupled simulation of descending parachute
Arai, N.; Shibusawa, R.; Takahashi, S.

17:10 1820 Optimization of a Krueger device for a regional aircraft wing configuration
de Rosa, D.; Andreutti, G.; Quagliarella, D.

17:30 1821 An approach for modelling the roughness-induced boundary layer transition using transport equations
Dassler, P.; Kožulović, D.; Fiala, A.

17:50 1822 Modeling of gas separated flows at inlet of suction channels on the basis of stationary discrete vortices
Averkova, O.; Logachev, A.; Logachev, I.; Logachev, K.

18:10 1823 Numerical simulation of a jet-vortex wake behind a cruise aircraft
Lobanova, M.A.; Tsirkunov, Y.M.

Monday, September 10, 2012, 16:30 - 18:30

TS025-2 **M-HS16**

Computational solid and structural mechanics
Chairperson: A. Garstecki

16:30 1824 An improved flexibility-based nonlinear frame element endowed with the fiber-free formulation
Marmo, F.; Lombardi, D.; Rosati, L.

16:50 1825 Residual based a posteriori error estimates for MITC plate elements
Beirao da Veiga, L.; Niiranen, J.; Stenberg, R.

17:10 1826 Stabilized finite element methods to deal with incompressibility in solid mechanics undergoing finite strains
Al Akhrass, D.; Drapier, S.; Bruchon, J.; Fayolle, S.

17:30 1827 Transition element for connectivity of thick segmented shells of revolution
Efraim, E.; Eisenberger, M.

17:50 1828 From nodal patch schemes to averaged strain elements
Castellazzi, G.; Krysl, P.

TS034-2 **J-HS14**

LES, DNS and hybrid RANS/LES methods
Chairperson: A. Huerta

16:30 1829 An improved wall-modelling for large-eddy simulation of compressible flow
Bocquet, S.E.; Sagaut, P.; Jouhaud, J.

16:50 1830 A dynamic VMS-LES model and its hybrid extension for the simulation of bluff-body flows at different Reynolds numbers
Moussaed, C.; Wornom, S.; Koobus, B.; Salvetti, M.V.; Dervieux, A.

17:10 1831 Direct numerical simulation of the 3D separated viscous fluid flows around the horizontally moving blunt bodies
Matyushin, P.V.; Gushchin, V.A.

17:30 1832 Direct numerical simulation of gas transfer with high Schmidt number in a buoyant-convective flow
Kubrak, B.; Wissink, J.; Herlina, H.

17:50 1833 Parallel implicit DNS of Rayleigh-Taylor instability
Yilmaz, I.; Edis, F.O.; Saygin, H.

TS035-2 **M-HS32**

Meshless and wavelet methods
Chairperson: J. Orkisz

16:30 1834 Application of the meshless method of fundamental solutions in estimation of hydraulic flow characteristics in the permeable foundation of concrete diversion dam
moved to MS636-2
Lashteh Neshaei, S.A.; Madandoust, A.

16:50 1835 Meshless and asymptotic numerical methods to detect bifurcation points for nonlinear poisson problems
cancelled
Tri, A.; Zahrouni, H.; Potier-Ferry, M.

17:10 1836 The analysis of thick plates considering a new meshless method
Belinha, J.; Dinis, L.M.J.S.; Natal Jorge, R.M.

17:30 1837 Multilevel meshless model for the elasto-plastic torsion of prismatic bars
Kozulić, V.; Gotovac, B.

TS043-2 **J-HS17**

Numerical methods and convergence acceleration in CFD
Chairperson: A. Stahl

16:30 1838 Accelerating convergence of the CFD linear frequency domain method by a preconditioned linear solver
McCracken, A.J.; Timme, S.; Badcock, K.J.

16:50 1839 Generalised Low-Mach preconditioning for arbitrary three-dimensional geometries
Fiedler, J.; di Mare, F.

17:10 1840 On the discretization of spatial metrics satisfying the GCL identities
Abe, Y.; Nonomura, T.; Iizuka, N.; Fujii, K.

17:30 1841 A robust multigrid method for the computation of turbulent, chemically reacting flows
Wasserman, M.; Mor-Yossef, Y.; Yavneh, I.; Greenberg, J.B.

17:50 1842 On the design of a nonconforming high-resolution finite element scheme
Möller, M.

19:00

Welcome Cocktail (Arcade Court of Main Building)

Tuesday, September 11, 2012, 08:00 - 10:00

08:00 - 08:40

SPL01 **M-Audimax**

Semi-Plenary Lecture
Chairperson: E. Stein

08:00 2000 Scale transitions in biomechanics and production technology by means of model reduction
Reese, S.; Radermacher, A.; Vladimirov, I.

SPL02 **J-HS10**

Semi-Plenary Lecture
Chairperson: G. Maier

08:00 2001 New methods and schemes in isogeometric analysis
Buffa, A.

SPL03 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: C. Hirsch

08:00 2002 Adjoint methods in CFD-based optimization - Gradient computation & beyond
Giannakoglou, K.; Papadimitriou, D.I.; Papoutsis-Kiachagias, E.M.

08:40 - 09:20

SPL04 **M-Audimax**

Semi-Plenary Lecture
Chairperson: P. Wriggers

08:40 2003 Isogeometric analysis: recent developments
Hughes, T.

SPL05 **J-HS10**

Semi-Plenary Lecture
Chairperson: W.K. Liu

08:40 2004 Approximations of incompressible large deformation elastic problems: some unresolved issues!
Auricchio, F.; Beirao da Veiga, L.; Lovadina, C.; Reali, A.; Taylor, R.L.; Wriggers, P.

SPL06 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: S. Pirker

08:40 2005 The many faces of modeling combustion in real systems
Pitsch, H.

09:20 - 10:00

SPL07 **M-Audimax**

Semi-Plenary Lecture
Chairperson: M. Papadrakakis

09:20 2006 A tumor growth model based upon the thermodynamically constrained averaging theory
Sciume, G.; Shelton, S.E.; Gray, W.G.; Miller, C.T.; Ferrari, M.; Decuzzi, P.; Schrefler, B.

SPL08 **J-HS10**

Semi-Plenary Lecture
Chairperson: J. Periaux

09:20 2007 The ACARE strategic research and innovation agenda: Providing the direction and priorities for the next 40 years of aviation research and technology
Williams, G.

SPL09 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: W.A. Wall

09:20 2008 Computation and physics of particle dynamics in turbulence
Soldati, A.

10:00 - 10:30
Coffee Break

Tuesday, September 11, 2012, 10:30 - 12:30

10:30 - 12:30

MS100-1 **M-HS48**

Advances in computational dynamics of structures
Chairperson: C. Adam

10:30 2100 Seismic performance of passive damping devices with uncertain parameters
Schmelzer, B.; Oberguggenberger, M.; Adam, C.

10:50 2101 Improved collapse capacity spectra for predicting seismic collapse of structures vulnerable to the P-delta effect
Tsantaki, S.; Jäger, C.; Wurzer, L.; Adam, C.; Oberguggenberger, M.

11:10 2102 Efficient response simulation by modal analysis of nonlinear hysteretic structural systems
Pradlwarter, H.; Jäger, C.; Falkner, F.

11:30 2103 Proposal for an advanced wave guide element
Kreutz, J.; Müller, G.

11:50 2104 Mechanical behavior of fractional visco-elastic beams
Di Paola, M.; Heuer, R.; Pirrotta, A.

12:10 2105 Vibrations of thin variable stiffness composite laminated shallow shells
Ribeiro, P.

MS106-1 **M-HS50**

Computational methods in an analysis of structures safety
Chairperson: J. Malachowski

10:30 2106 Progressive collapse analysis of composite column under fire and blast extreme loadings
Malendowski, M.; Garbowski, T.; Glema, A.

10:50 2107 Numerical modelling and simulation of a 20 mm 54 g FSP impact into a composite – foam – ceramic shield
Klasztorny, M.; Dziewulski, P.; Swierczewski, M.; Morka, A.

11:10 2108 Comparison study of numerical methods of explosion process implementation
Baranowski, P.; Malachowski, J.; Mazurkiewicz, L.

11:30 2109 Modelling and simulation of composite elements dynamic progressive crushing
Mazurkiewicz, L.; Malachowski, J.; Gotowicki, P.; Baranowski, P.

11:50 2110 A systematic approach to design crash elements and to validate FE-analyses by combining computational methods with analytical considerations
Müller, B.; Schagerl, M.; Schröder, K.

MS107-3 **J-SR10**

Multiscale modelling of materials and structures
Chairperson: X. Markenscoff

10:30 2111 Sensitivity analysis of transient temperature field in micro domains with respect to the dual phase lag model parameters
Majchrzak, E.; Mochnacki, B.

10:50 2112 The effect of random waviness of carbon nanotubes on the mechanical and damping properties of nanocomposites
Savvas, D.; Papadopoulos, V.; Papadrakakis, M.

11:10 2113 Adaptive mesh generation for multi scale applications
Banaś, K.; Kruzel, F.; Cybułka, P.; Perzyński, K.; Madej, L.

11:30 2114 A multiscale approach to blood flows
Jakubowicz, A.; Pietrzyk, M.

11:50 2115 Identification of microscale heat transfer parameters using bioinspired algorithms
Burczynski, T.S.; Dziatkiewicz, J.; Kus, W.; Majchrzak, E.

MS108-3 **M-Elise Richter**

Modeling of diffuse and discontinuous failure of solids
Chairperson: C. Linder

10:30 2116 Concurrent multiscale analysis of heterogeneous materials
Lloberas-Valls, O.; Everdij, F.P.X.; Rixen, D.J.; Simone, A.; Sluys, L.J.

10:50 2117 Phase field modeling of fracture in plates and shells
Ulmer, H.; Hofacker, M.; Miehe, C.

11:10 2118 Modelling and simulation of curing and damage of thermosetting adhesives
Mergheim, J.; Possart, G.; Steinmann, P.

11:30 2119 Modeling of interface and joint failure using solid finite elements with high aspect ratio
Manzoli, O.L.; Bitencourt Jr., L.A.G.; Bittencourt, T.N.

11:50 2120 Constitutive microplane and interface laws for multiscale analysis of steel fiber concrete
Etse, G.; Caggiano, A.; Vrech, S.

12:10 2121 Strain localization, strong discontinuities and strain injection procedures in computational modeling of material failure
Dias, I.F.; Oliver, X.; Huespe, A.

MS114-1 **J-SR64**

Computational mechanics of cells, tissues, and biomaterials
Chairperson: A.A. Zadpoor

10:30 2122 A multiscale mechanical model for the cervical tissue
Peralta, L.M.; Rus Carlborg, G.; Florido, J.; Molina, F.

10:50 2123 Wound healing: a multi-scale approach
Vermolen, F.; Gefeb, A.

11:10 2124 Computational analysis of cross-linked F-actin networks using multi-scale models
Unterberger, M.J.; Holzapfel, G.A.

11:30 2125 Estimation of the loads experienced by bone tissue using a hybrid simulated annealing-pattern search optimization algorithm
Campoli, G.; Zadpoor, A.A.

11:50 2126 Optimized parameter extraction method for creep indentation of knee articular cartilage
Abedian Dehaghani, R.; Hurschler, C.

12:10 2127 Ultrasonic monitoring of the decellularization process of porcine corneal stroma
Bochud, N.; Melchor, J.; Peralta, L.M.; Rus Carlborg, G.; González, M.; Alaminos, M.

MS117-1 **M-HS47**

Advances in finite element technologies
Chairperson: M. Okrouhlik

10:30 2128 Validity of models and their verification
Okrouhlik, M.

10:50 2129 A novel three field mixed finite element technology with OSS stabilization
Chiumenti, M.; Cervera, M.; Codina, R.

11:10 2130 Isogeometric free vibration of elastic simple form bodies
Kolman, R.; Bastl, B.; Plesek, J.; Okrouhlik, M.

11:30 2131 Sparse direct solution of very large finite element problems
Parik, P.; Plesek, J.

11:50 2132 Computational modelling of contact-impact problems in explicit transient dynamic analysis
Gabriel, D.; Kopacka, J.; Plesek, J.; Ulbin, M.

12:10 2133 On effective implementation of the non-penetration condition for non-matching grids preserving scalability of FETI based algorithms
Brzobohaty, T.; Vlach, O.; Dostal, Z.

Tuesday, September 11, 2012, 10:30 - 12:30

MS121 **J-HS15**

Applications of computational geometry in analysis
Chairperson: F. Cirak

10:30 2134 Convergent meshfree approximation schemes of arbitrary order and smoothness
Bompadre, A.; Perotti, L.E.; Cyron, C.J.; Ortiz, M.

10:50 2135 Point-set manifold processing for computational mechanics
Millan, D.; Arroyo, M.

11:10 2136 A subdivision-based implementation of the hierarchical b-spline finite element method
Bornemann, B.; Cirak, F.

11:30 2137 Universal meshes: high-order computations with nonconforming meshes
Lew, A.J.

11:50 2138 Variational shape optimisation using immersed finite elements and multiresolution surfaces
Bandara, K.; Rüberg, T.; Cirak, F.

MS126-1 **M-HS23**

Modelling of advanced composites and functionally graded materials: material microstructure, properties and behavior under service conditions
Chairperson: M. Basista

10:30 2139 Sequential linearization method for elastic-viscoplastic heterogeneous materials **(Keynote Lecture)**
Kowalczyk-Gajewska, K.; Petryk, H.

11:00 2140 Modelling macroscopic fracture toughness and matrix-inclusion interaction in ceramics **(Keynote Lecture)**
Gilabert, F.A.; Cantavella, V.; Sánchez, E.

11:30 2141 Damaging mechanisms and constitutive modeling of metal-matrix composites
Bolzon, G.; Cornaggia, A.

11:50 2142 Modelling of thermal stresses and damage in Cu/Al_2O_3 interpenetrating phase composites
Weglewski, W.; Basista, M.

12:10 2143 Optimal design of layered refractories for thermal shock resistance
Hein, J.; Kuna, M.

MS128-3 **M-HS41**

Computational material modeling of wood and wood products
Chairperson: M. Kaliske

10:30 2144 Numerical analysis on asymmetrically combined glulam
Frese, M.; Blaß, H.J.

10:50 2145 Physical-mechanical properties of some European hardwoods
Niemz, P.; Ozyhar, T.; Sonderegger, W.; Martinessen, A.

11:10 2146 Use of scanning techniques for obtaining proper input data adapted to finite element and fracture analysis of wood and timber
Petersson, H.

11:30 2147 Modelling of knots in timber structures in a finite element analysis
Jenkel, C.; Lang, R.; Kaliske, M.

11:50 2148 Modeling the behavior of wood with knots at macro-scale level
Guindos, P.; Guaita, M.

12:10 2149 Influence of different knot groups on effective mechanical properties of solid-wood based products determined by means of 3D finite-element simulations
Lukacevic, M.; de Borst, K.; Füssl, J.; Eberhardsteiner, J.

MS129-3 **J-HS10**

Isogeometric analysis
Chairperson: T. Kvamsdal

10:30 2151 Isogeometric boundary element analysis using unstructed T-splines
Scott, M.A.; Simpson, R.N.; Hughes, T.

10:50 2150 Isogeometric analysis with the boundary element method and T-splines
Simpson, R.N.; Scott, M.A.; Lipton, S.; Bordas, S.P.A.; Hughes, T.

11:10 2152 Analysis-suitable and dual-compatible T-splines
Beirao da Veiga, L.; Buffa, A.; Cho, D.; Sangalli, G.; Vazquez, R.

11:30 2153 Isogeometric discrete differential forms based on T-splines
Buffa, A.; Sangalli, G.; Vazquez, R.

11:50 2154 Structure preserving isogeometric methods
Hiemstra, R.; Gerritsma, M.

12:10 2155 Isogeometric analysis and the finite cell method
Schillinger, D.; Scott, M.A.; Borden, M.J.; Dede, L.; Evans, J.A.; Hughes, T.; Rank, E.

MS205-1 **J-SR62**

Non-Newtonian fluid flows: numerical methods and applications
Chairperson: R.J. Poole

10:30 2156 Dynamics and rheology of micellar fluids from molecular dynamics simulations **(Keynote Lecture)**
Sangwai, A.; Sureshkumar, R.

11:00 2157 Cross-slot flow for extensional rheometry: from optimization to experimentation **(Keynote Lecture)**
Oliveira, M.S.N.; Haward, S.J.; McKinley, G.H.; Alves, M.A.

11:30 2158 Porting a 2D unstructured CFD code from the CPU to the GPU
Pereira, S.P.; Vuik, C.; Pinho, F.T.; Nobrega, J.M.

11:50 2159 Flow of a blood analogue fluid through microchannels with a hyperbolic-shaped stenosis
Sousa, P.C.; Pinho, F.T.; Alves, M.A.; Oliveira, M.S.N.

12:10 2160 Development length of laminar channel flows with slip velocity at the walls
Ferrás,L.L.;Afonso,A.M.;Nobrega,J.M.;Alves,M.A.;Pinho,F.T.

MS208-3 **J-UG22**

New trends in numerical methods for multi-material compressible fluid flows
Chairperson: A. Barlow

10:30 2161 Lagrange-remap schemes in conservative form
de Vuyst, F.; Fochesato, C.; Loubere, R.; Rouzier, P.; Saas, L.; Motte, R.; Ghidaglia, J.

10:50 2162 A second order finite volume method for a multi-material heat equation on cartesian grids
Latige, M.; Gallice, G.; Colin, T.

11:10 2163 A 2D sliding algorithm for Eulerian multimaterial simulations
Claisse, A.; Ghidaglia, J.; Rouzier, P.; Saas, L.

11:30 2164 An Eulerian Godunov-type scheme for calculation of the elastic-plastic flow equations with moving grids
Menshov, I.

11:50 2165 An interface reconstruction method to deal with filaments in multi-material simulations
Fochesato, C.; Loubere, R.; Motte, R.; Ovadia, J.

12:10 2166 Contact algorithms for cell-centered Lagrangian schemes
Clair, G.; Despres, B.; Labourasse, E.

Tuesday, September 11, 2012, 10:30 - 12:30

MS209-1 **J-HS13**

Numerical modeling of "separated" and "dispersed" two-phase flows
Chairperson: B. Koren

10:30 2167 A new model and numerical method for compressible two-fluid flow **(Keynote Lecture)**
Kreeft, J.; Koren, B.

11:00 2168 Innovative formulation for the numerical simulation of uncertain shock waves in dispersed two-phase flows **(Keynote Lecture)**
Abgrall, R.; Rodio, M.G.; Congedo, P.M.

11:30 2169 Numerical simulations of two-phase flow with ComFLOW: past and recent developments
Luppes, R.; Duz, B.; van der Heiden, H.J.L.; van der Plas, P.; Veldman, A.E.P.

11:50 2170 The application of the CFD methods to solution of the problem of atmospheric emission purification
Alferov, V.I.; Asmolov, E.; Chernyshev, S.L.; Ivanov, A.I.; Kazakov, A.V.; Kiselev, A.; Kuryachii, A.P.

12:10 2171 Preconditioners for the discrete Cahn-Hilliard equation in three space dimensions
Wu, X.; Axelsson, O.; Boyanova, P.; Neytcheva, M.

MS211 **J-SR63**

The ERCOFTAC knowledge base wiki – New test cases for establishing quality and trust in CFD
Chairperson: W. Rodi

10:30 2172 Introduction to the ERCOFTAC knowledge base wiki on CFD test cases
Rodi, W.

11:10 2173 Flow over periodic hills - test case for ERCOFTAC knowledge base wiki
Breuer, M.; Rapp, C.; Manhart, M.

11:30 2174 The ERCOFTAC knowledge base Wiki presenting turbulent flow separation in a 3D diffuser as a fluid mechanics benchmark
Jakirlic, S.

11:50 2175 High Reynolds number flow around airfoil in deep stall
Mockett, C.; Strelets, M.

12:10 2176 Unconfined swirling premixed methane/air flames: experimental characterization of flow and scalar fields using advanced laser diagnostics
Dreizler, A.

MS212-1 **J-HS14**

Current trends in modelling and simulations of turbulent flows
Chairperson: S. Jakirlic

10:30 2177 Reynolds-stress models prediction of flow around airfoils
Gerolymos, G.A.; Vallet, I.

10:50 2178 Unconditionally stable time marching scheme for second-moment closure on unstructured grids
Mor-Yossef, Y.

11:10 2179 A variational multiscale method with multifractal subgrid-scale modeling for large-eddy simulation of turbulent flow
Gravemeier, V.; Rasthofer, U.

11:30 2180 Investigation of flow control around vehicles using LES and PANS
Krajnovic, S.

11:50 2181 Further analytical developments of the PITM method for hybrid non-zonal RANS-LES flow simulations
Chaouat, B.

12:10 2182 Algebraic hybrid RANS-LES model: recent development and application
Peng, S.

MS302-3 **M-HS21**

Computational modelling of smart materials and structures
Chairperson: M. Kuczma

10:30 2183 Morphing capability of multi-layer adaptive piezoelectric thin shells for future space telescopes
Preumont, A.; Bastaits, R.; Rodrigues, G.; Hagedorn, P.

10:50 2184 Numerical and experimental investigation of the piezoelectric actuator used for the synthetic jets membrane control
Rimašauskienė, R.; Ostachowicz, W.; Malinowski, P.; Wandowski, T.

11:10 2185 Wavenumber domain filtering of elastic wave propagation for damage localization in composite plates
Ostachowicz, W.; Kudela, P.; Radzieński, M.W.

MS402-3 **M-HS42**

Parallel computing and domain decomposition methods
Chairperson: S. Bertoluzza

10:30 2186 Fictitious space multigrid method based on domain decomposition for elliptic boundary value problems
Kraus, J.K.

10:50 2187 Simulations of large scale three-dimensional sedimentary basin dynamics through domain decomposition techniques
Cervone, A.; Fadel, N.A.; Formaggia, L.

11:10 2188 A direction splitting approach for incompressible flow related to reactor safety
Gornak, T.; Iliev, O.; Minev, P.D.; Zemitis, A.

MS605-2 **J-HS16**

Computational design of functional thin films
Chairperson: P.H. Mayrhofer

10:30 2189 First principles modelling of thermodynamics and surface kinetics of multicomponent nitride hard coatings materials
Alling, B.

10:50 2190 Calculational study of alloying effects in Ti–Al–N-based protective hard coatings
Holec, D.; Rachbauer, R.; Mayrhofer, P.H.

11:10 2191 Toughness enhancement in transition metal nitride thin films by alloying and valence electron concentration tuning
Sangiovanni, D.G.; Chirita, V.; Hultman, L.

11:30 2192 Structural characterization of amorphous Zr-Si-C
Kádas, K.; Andersson, M.; Holmström, E.; Wende, H.; Karis, O.; Urbonaite, S.; Butorin, S.M.; Nikitenko, S.; Kvashnina, K.O.; Jansson, U.; Eriksson, O.

11:50 2193 Dynamics of atomic-scale transport on compound surfaces, TiN(001)
Sangiovanni, D.G.; Edström, D.A.; Chirita, V.; Hultman, L.; Petrov, I.;Greene, J.

12:10 2194 Thermal decomposition of ternary nitrides as well as elastic and thermodynamic properties of binary fcc metal nitrides: a first-principles calculations
Wang, A.; Du, Y.; Chen, L.; Wang, W.

Tuesday, September 11, 2012, 10:30 - 12:30

MS612-3 **M-HS28**

Uncertainty quantification in computational mechanics and engineering sciences

Chairpersons: C. Papadimitriou; H. Jensen

10:30 2195 Uncertainty quantification for post-buckling analysis of cylindrical shells with experimental comparisons
Capiez-Lernout, E.; Soize, C.; Mignolet, M.

10:50 2196 H_∞ control of flexible structures using smart materials with uncertainties
Zhang, K.; Ichchou, M.; Scorletti, G.; Mieyeville, F.

11:10 2197 Robust vibration reduction of structures with uncertain piezoelectic joints
Karim, Y.; Blanze, C.

11:30 2198 Stochastic reduced-order model for complex beam-like dynamical structures
Batou, A.; Soize, C.; Brie, N.

11:50 2199 Stochastic interval analysis of natural frequency and mode shape of structures with uncertainties
Wang, C.; Gao, W.; Song, C.

MS622-3 **J-HS18**

Multiscale and multiphysics modelling for complex materials

Chairperson: G. Pijaudier-Cabot

10:30 2200 Meshfree quasicontinuum - a quasicontinuum formulation based on local maximum-entropy interpolation schemes
Kochmann, D.M.; Amelang, J.S.; Espanol, M.; Ortiz, M.

10:50 2201 Finite strain inelastic models with gradient averaging and AceGen implementation
Wcislo, B.; Zebro, T.; Kowalczyk-Gajewska, K.; Pamin, J.

11:10 2202 A high-continuity multi-scale static and dynamic modelling of periodic materials
Bacigalupo, A.; Gambarotta, L.

11:30 2203 Relative rotations in block masonries as equivalent micropolar and second-gradient continua
Pau, A.; Trovalusci, P.

11:50 2204 Comparison between a simplified macroscopic frame model and a multiscale 2D procedure for masonry panels
Addessi, D.; De Bellis, M.L.; Masiani, R.

MS626-3 **M-HS46**

Multiphysics simulation: Modeling, solution methods and applications

Chairperson: C.A. Felippa

10:30 2205 Parallel adaptive simulation of gravity current problems using a stabilized finite element method
Rossa, A.; Coutinho, A.

10:50 2206 Coupled finite element models for high-frequency wave propagation and electromagnetic-structure interaction with application to laser simulation
Wohlmuth, B.I.; Wohlmuth, M.

MS636-1 **M-HS32**

Meshless and related methods

Chairperson: J. Orkisz

10:30 2207 The computational efficiency of EFG simulations revisited **(Keynote Lecture)**
Karatarakis, A.; Metsis, P.; Papadrakakis, M.

11:00 2208 The information-flux method: a true Petrov-Galerkin formulation based on maximum-entropy methods applied to convection-dominated problems **(Keynote Lecture)**
Nissen, K.; Gravemeier, V.; Wall, W.A.

11:30 2209 A meshless method for the Reissner-Mindlin plate equations based on a stabilized mixed weak form using maximum-entropy basis functions
Hale, J.S.; Baiz, P.M.

11:50 2210 Calculation for stress intensity factor using adaptive meshfree method
Hagihara, S.; Shiratsuru, Y.; Taketomi, S.; Tadano, Y.

12:10 2211 A new meshless method applied to the analysis of 3D structures
Belinha, J.; Dinis, L.M.J.S.; Natal Jorge, R.M.

MS639-1 **J-UG21**

Simulation of cardiovascular procedures and devices

Chairpersons: F. Auricchio; M. Grigioni

10:30 2212 Study of the radial force applied by transcatheter aortic valves on the left ventricular outflow tract
Tzamtzis, S.; Viquerat, J.; Yap, J.; Mullen, M.J.; Burriesci, G.

10:50 2213 Analysis of the clinical performance of an aortic BMHV by numerical simulation
Annerel, S.; Taelman, L.; Bols, J.; Claessens, T.; Degroote, J.; Segers, P.; Verdonck, P.; Vierendeels, J.

11:10 2214 Medical device risk analysis: blood damage potential in heart valves' regurgitation phase
Grigioni, M.; Wang, G.; Daniele, C.; D'Avenio, G.

11:30 2215 Effect of idealized versus measured inlet velocity profiles on image-based CFD of aortic hemodynamics
Morbiducci, U.; Ponzini, R.; Gallo, D.; De Santis, G.; Bignardi, C.; Rizzo, G.

11:50 2216 A corotational shell finite element for aortic valve modeling
Caselli, F.; Bisegna, P.

MS661-3 **J-SR20**

Numerical methods and applications of multi-physics in biomechanical modeling

Chairperson: A. Figueroa

10:30 2217 Kinematically coupled scheme II: fluid-structure interaction between an incompressible, viscous fluid and a multi-layered structure modeling arterial walls
Bukac, M.; Canic, S.; Glowinski, R.

10:50 2218 An isogeometric analysis approach to model the aortic valve behavior
Auricchio, F.; Hartmann, S.; Hughes, T.; Morganti, S.; Reali, A.

11:10 2219 Predicting patient-specific vascular distribution for nanoparticles
Hossain, S.S.; Zhang, Y.; Ferrari, M.; Hughes, T.; Decuzzi, P.

11:30 2220 Simulation of myocardial perfusion by multi-compartment flow modeling and 1D-3D flow coupling
Michler, C.; Nordsletten, D.; Cookson, A.; Lee, J.; Chabiniok, R.; Hyde, E.; Sochi, T.; Sinclair, M.; Goyal, A.; Smith, N.

11:50 2221 Partitioned algorithms for the solution of the fluid-structure interaction problem for hemodynamic applications
Vergara, C.; Nobile, F.; Pozzoli, M.

12:10 2222 Simulation of three-dimensional hemodynamics in a whole-body arterial network
Xiao, N.; Humphrey, J.D.; Figueroa, C.A.

MS665-1 **J-HS17**

Numerical methods in combustion and exhaust aftertreatment of internal combustion engines

Chairperson: T. Lauer

10:30 2223 0D engine test bench using stochastic reactor model
Mauss, F.; Pasternak, M.; Matrsciano, A.

Tuesday, September 11, 2012, 10:30 - 12:30

10:50 2224 Global combustion mechanism for simulation of self ignition
Voglsam, S.; Winter, F.

11:10 2225 A detailed analysis of engine knock initiation by means of a stochastic reactor model
Heiss, M.; Lauer, T.; Geringer, B.

11:30 2226 Modeling of natural gas engine with the emphasis on prediction of knock
Kozarac, D.; Schuemie, A.; Ofner, H.; Tatschl, R.

11:50 2227 Modeling of diesel engine combustion and pollutant formation using a 0-D multi-zone combustion model
Pötsch, C.; Schuemie, A.; Ofner, H.; Priesching, P.

12:10 2228 Optimization of a heavy duty engine by integrated numerical models
Forsthuber, F.; Lauer, T.; Geringer, B.

MS666 **J-HS12**

Simulation of sensor signals
Chairpersons: A. Kuhn; S. Jakubek

10:30 2229 Simulation of errors during the calibration of a magnetic and coordinate measuring machine (MCMM)
Husstedt, H.; Ausserlechner, U.; Kaltenbacher, M.

10:50 2230 Nonlinear conjugate gradient algorithm for model based design of experiments
Deregnaucourt, M.; Hametner, C.; Stadlbauer, M.; Jakubek, S.; Wurzenberger, J.

11:10 2231 A machine learning based approach to large scale model evaluation and iterative experimental design
Bartolomé, A.; Palau, T.; Kuhn, A.; Rauh, A.; Mader, H.

11:30 2232 Analysis of the aperture angle of exteroceptive sensors for automotive safety applications in traffic-scenarios with crossing objects
Botsch, M.; Stoll, J.

STS01 **M-HS07**

Progress in CFD for high-lift application and design
Chairperson: J. Wild

10:30 2233 Comparison of grid adaptation techniques for high lift flows application
Ponsin, J.; Meheut, M.

10:50 2234 Acceleration of URANS for application to separated high-lift flows
Eliasson, P.; Marongiu, C.M.; Mikhaylov, S.

11:10 2235 Analysis and application of suitable CFD-based optimization strategies for high-lift system design
Iannelli, P.; Wild, J.; Minervino, M.; Moens, F.; Raets, M.

11:30 2236 A CFD benchmark for flow separation control application
Ciobaca, V.; Dandois, J.; Bieler, H.

TS010-1 **M-HS31**

Computational engineering sciences and physics
Chairperson: K. Giannakoglou

10:30 2237 Understanding the drag reduction properties of the flow over k- and d-type rough surfaces
Alhinai, A.; Nowakowski, A.

10:50 2238 An investigation of natural convection boundary layer flow by using homotopy analysis method
Chen, C.; Tien, W.C.

11:10 2239 Two stroke engines with low pressure direct injection - a great challenge for simulation!
Winkler, F.; Kirchberger, R.; Schögl, O.; Eichlseder, H.

11:30 2240 Mean velocity profile in the vicinity of a building within urban boundary layer with high density of buildings
Popovac, M.

11:50 2241 Aeolus purge system conductivity analysis
Markelov, G.; Endemann, M.; Wernham, D.

12:10 2242 Simulation of hyperbolic type bio-heat transfer problems by differential transformation method
Lai, H.; Ni, J.; Chang, C.

TS012-3 **J-HS11**

Computational fluid mechanics
Chairperson: Y. Epshteyn

10:30 2243 Regularized shallow water equations applied to flows with wet/dry bottom areas
Bulatov, O.; Elizarova, T.; Lengrand, J.

10:50 2244 Implicit time advancing applied to shallow water problems coupled with different models of sediment transport
Guillard, H.; Bilanceri, M.; Cinat, P.; Beux, F.; ElMahi, I.; Salvetti, M.V.

11:10 2245 Upwind residual distribution for modelling shallow-water geophysical flows
Sármány, D.; Hubbard, M.E.; Ricchiuto, M.

11:30 2246 Mass-, momentum- and energy conserving discretizations on general grids for the shallow water equations
Van't Hof, B.; Veldman, A.E.P.

11:50 2247 Propagation over a sloping bottom of waves generated by a large convoy
Rodrigues, S.; Nascimento, M.F.; Fonseca, N.; Neves, C.; Santos, J.A.

TS016-1 **M-HS34**

Computational inverse problems and optimization
Chairperson: C. Bucher

10:30 2248 Novel infill criterion for stochastic metamodel-based optimization
Ezawa, Y.

10:50 2249 Extending moving least squares to mixed variables for metamodel-assisted optimization
Filomeno Coelho, R.

11:10 2250 Compromise between derivative-based and derivative-free optimization for nonsmooth and noisy dynamic responses
Yamakawa, M.; van Keulen, F.

11:30 2251 Mutiple-gradient descent algorithm for multiobjective optimization
Desideri, J.

11:50 2252 How to route a pipe - discrete approaches for physically correct routing
Mars, S.; Schelbert, J.; Schewe, L.

12:10 2253 Automated optimization of gray-scale masks for 3D micro-structuring
van Kempen, F.; Hirai, Y.; van Keulen, F.; Tabata, O.

Tuesday, September 11, 2012, 10:30 - 12:30

TS025-3 **M-HS16**

Computational solid and structural mechanics
Chairperson: R. Talreja

10:30	2254	Constitutive equations and finite element formulation for anisotropic hyperelastic composites based on constrained Cosserat continuum **Lasota, T.; Burša, J.; Fedorova, S.**
10:50	2255	Extended transformation field analysis using adaptative hyper-reduction **Courtier, V.; Ryckelynck, D.; Constantinescu, A.**
11:10	2256	Modeling of compression test for large cell 3D reinforced composite specimens **Osheva, I.; Tashkinov, A.; Shavshukov, V.**
11:30	2257	Mechanical and hygrothermal static analysis of multilayered composite structures **Brischetto, S.; Carrera, E.**
11:50	2258	Effect of thickness on the delamination of unidirectional L-shaped composites **Gozluklu, B.; Yavas, D.; Coker, D.**
12:10	2259	Combining a CDM model and a FE-particle method to analyse the ruin modes of a composite structure during a crash **Espinosa, C.; Limido, J.; Lachaud, F.; Lacome, J.**

12:30 - 14:00

Lunch

Tuesday, September 11, 2012, 14:00 - 16:00

14:00 - 16:00

IndSymp **J-HS15**

Industrial Symposium SIMULIA

14:00 2400 Real life applications of multiphysics methods in Abaqus
Oancea, V.

MS100-2 **M-HS48**

Advances in computational dynamics of structures
Chairperson: H. Pradlwarter

14:00 2401 Pseudo-static analysis of mechanical behaviors of immersion joint based on numerical simulation
Jing, L.; Yuan, Y.

14:20 2402 Asynchronous collision integrator for frictionless impacts
Wolff, S.; Bucher, C.

14:40 2403 System identification based on selective sensitivity analysis: a case-study
Billmaier, M.; Bucher, C.

15:00 2404 Comparison of constitutive soil models for the simulation of dynamic roller compaction
Pistrol, J.; Falkner, F.; Adam, D.; Adam, C.

15:20 2405 Parallelization in time of linear transient dynamic problems through the tensor-product form of the Newmark integration scheme
Rannou, J.; Ryan, J.

MS106-2 **M-HS50**

Computational methods in an analysis of structures safety
Chairperson: J. Malachowski

14:00 2406 Effects of numerical models on internal blasting simulation of a tube-tunnel
Wang, Z.; Yuan, Y.

14:20 2407 Simulation analyses of dynamic character coefficient of journal bearing
Shi, D.; Shi, X.

14:40 2408 Some aspects of numerical tests of special railway wagon for intermodal transport of heavy semitrailers
Krason, W.; Niezgoda, T.; Damaziak, K.

15:00 2409 Study on method to determining the rational depth of metro station in composed of soil and weathered rock stratum
Wang, X.D.; Yuan, Y.; Wu, X.; Du, Z.

MS107-4 **J-SR10**

Multiscale modelling of materials and structures
Chairperson: T.S. Burczynski

14:00 2410 Structure/material concurrent optimization of periodic lattice materials based extended multiscale finite element method
Yan, J.; Hu, W.; Duan, Z.

14:20 2411 The postcritical deformation stage and non-local failure conditions at fracture
Vildeman, V.E.; Tretyakov, M.P.

14:40 2412 Numerical modelling of phase transformation in DP steel after hot rolling and laminar cooling
Pernach, M.; Bzowski, K.; Pietrzyk, M.

15:00 2413 Modeling of two-phase grain structure in Ti-6Al-4V by using cellular automata
Krumphals, A.; Sommitsch, C.; Stockinger, M.

15:20 2413a NEW Multi-scale modeling of coupled shockwave interaction with strain rate sinsitive polymers
Barsoum, R.G.

MS108-4 **M-Elise Richter**

Modeling of diffuse and discontinuous failure of solids
Chairperson: X. Oliver

14:00 2414 Phase-field models for dynamic crack propagation
(Keynote Lecture)
Borden, M.J.; Hughes, T.; Landis, C.M.

14:30 2415 Modeling of localized damage using the crack band approach
(Keynote Lecture)
Jirasek, M.; Bauer, M.

15:00 2416 Conforming finite elements with embedded strong discontinuities
Dias-da-Costa, D.; Alfaiate, J.; Sluys, L.J.; Areias, P.; Fernandes, C.; Júlio, E.

15:20 2417 Modeling non-local damage in quasi-brittle materials from crack interactions
Rojas Solano, L.B.; Grégoire, D.; Pijaudier-Cabot, G.

15:40 2418 A variational multiscale model for fracture
Sánchez, P.J.; Toro, S.; Blanco, P.; Huespe, A.; Feijoo, R.

MS114-2 **J-SR64**

Computational mechanics of cells, tissues, and biomaterials
Chairperson: F. Vermolen

14:00 2419 Corneal stroma recellularization process advantaged by ultrasound
Melchor, J.; Bochud, N.; Peralta, L.M.; Rus Carlborg, G.; González, M.; Alaminos, M.

14:20 2420 Fast simulation of bone remodeling using artificial neural networks
Asadi Nikooyan, A.; Zadpoor, A.A.

14:40 2421 Nonlinearity in bone: a micromechanics approach
Parnell, W.; Melchor, J.; Rus Carlborg, G.

15:00 2422 A bottom-up approach for the elasto-damage modeling and simulation of soft collagenous tissues
Marino, M.

MS117-2 **Advances in finite element technologies** **M-HS47**

Chairperson: M. Okrouhlik

14:00 2423 Vibration reduction of electric motor system by combining electromagnetic, vibration analysis and topology optimization
Hwang, J.; Kim, C.W.

14:20 2424 Calibration of parameters and FE-code implementations of directional distortional hardening models
Hruby, Z.; Marek, R.; Parma, S.; Plesek, J.; Feigenbaum, H.P.; Dafalias,Y.F.

MS126-2 **M-HS23**

Modelling of advanced composites and functionally graded materials: material microstructure, properties and behavior under service conditions
Chairperson: G. Bolzon

14:00 2425 Multi-objective optimization of effective thermo-mechanical properties of metal-ceramic composites
Kursa, M.; Kowalczyk-Gajewska, K.; Petryk, H.

14:20 2426 The robust optimization method of functionally gradient materials under cyclic thermal and mechanical loading
Maciejewski, G.; Mróz, Z.

14:40 2427 Thermo-mechanical modelling of a finctionally graded material
Kulasegaram, S.; Shabana, Y.M.; Karihaloo, B.L.

15:00 2428 Thermomechanical behaviour of a functionally graded brake disk
Müller, R.; Konchakova, N.

15:20 2429 Modelling of contact interface oxidation process at asperity scale
Maciejewski, J.; Białas, M.; Mróz, Z.

Tuesday, September 11, 2012, 14:00 - 16:00

MS128-4 **M-HS41**

Computational material modeling of wood and wood products
Chairperson: P. Niemz

14:00 2430 Homogenization of 2-D honeycomb material **(Keynote Lecture)**
Freund, J.T.; Karakoc, A.
14:30 2431 A three dimensional plasticity model for perpendicular to grain cohesive fracture in wood **(Keynote Lecture)**
Danielsson, H.; Gustafsson, P.J.
15:00 2432 A 3D constitutive wood model using the concepts of continuum damage mechanics
Sandhaas, C.; van de Kuilen, J.G.
15:20 2433 Finite element simulation of the hygro-thermal response of wood during surface densification
Genoese, A.; Genoese, A.; Fortino, S.; Rautkari, L.
15:40 2434 Experimental and numerical investigations on fire-resistance analysis of a wood-concrete composite deck
Meena, R.; Schollmayer, M.; Hehl, S.; Tannert, T.

MS129-4 **J-HS10**

Isogeometric analysis
Chairperson: L. Beirao da Veiga

14:00 2435 Adaptive isogeometric analysis based on a posterirori error estimates **(Keynote Lecture)**
Kvamsdal, T.; Johannessen, K.A.; Kumar, M.; Okstad, K.M.
14:30 2436 A hierarchic series of NURBS-based shell elements **(Keynote Lecture)**
Bischoff, M.; Echter, R.
15:00 2437 Subdivision-stabilised immersed b-spline finite elements for moving boundary flows
Cirak, F.; Rüberg, T.
15:20 2438 Isogeometric analysis of nearly incompressible large strain plasticity
Elguedj, T.; Hughes, T.
15:40 2439 Considerations of trimmed NURBS surfaces in isogeometric analysis
Schmidt, R.; Wüchner, R.; Bletzinger, K.

MS205-2 **J-SR62**

Non-Newtonian fluid flows: numerical methods and applications
Chairperson: M.A. Alves

14:00 2440 Direct numerical simulation of decaying homogeneous isotropic turbulence of generalized Newtonian fluids
Poole, R.J.; Chakraborty, N.
14:20 2441 Multiscale simulation of dilute polymeric fluids by solving a high-dimensional Navier-Stokes-BCF system
Rüttgers, A.; Griebel, M.
14:40 2442 Numerical solution of unsteady p-incompressible Navier-Stokes equations by the LDG finite element method
Malkmus, T.; Toulopoulos, I.
15:00 2443 Natural convection of a Bingham fluid in a vertical channel: onset and instability
Karimfazli, I.; Frigaard, I.
15:20 2444 Uzawa-like methods for numerical modelling of unsteady viscoplastic Bingham medium flows
Muravleva, L.V.; Muravleva, E.
15:40 2445 Displacement of yield stress fluids in inclined pipes
Alba, K.; Frigaard, I.; Taghavi, S.M.

MS208-4 **J-UG22**

New trends in numerical methods for multi-material compressible fluid flows
Chairperson: P. Maire

14:00 2446 Conservative remapping of vectors for staggered arbitrary Lagrangian-Eulerian methods
Kucharik, M.; Shashkov, M.
14:20 2447 Add-ons to the compatible staggered Lagrangian scheme... and other unspoken details
Loubere, R.
14:40 cancelled 2448 New contributions to staggered Lagrangian schemes in two and three dimensions
Vachal, P.; Loubere, R.; Maire, P.

MS209-2 **J-HS13**

Numerical modeling of "separated" and "dispersed" two-phase flows
Chairperson: A. Murrone

14:00 2449 Numerical coupling strategy for two-phase flow computations: application to solid rocket motors
Sibra, A.; Laurent, F.; Dupays, J.; Massot, M.; Murrone, A.
14:20 2450 Towards realizable large-eddy simulation of two-phase flows: multi-Gaussian quadrature and dedicated numerical methods
Vié, A.; Chalons, C.; Laurent, F.; Fox, R.O.; Massot, M.
14:40 2451 Eulerian numerical methods on unstructured meshes for the large eddy simulation of sprays within liquid rocket engines
Le Touze, C.; Murrone, A.; Montreuil, E.; Guillard, H.
15:00 2452 Two-way coupling modeling through Eulerian moment method for spray injection in engine simulations
Emre, O.; Laurent, F.; de Chaisemartin, S.; Jay, S.; Massot, M.
15:20 2453 Hybrid multi-fluid methods for coalescing nano-to-inertial sprays
Doisneau, F.; Dupays, J.; Laurent, F.; Massot, M.
15:40 2454 The evolution of disturbances in multi-phase turbulent swirling flow
Asmolov, E.; Kazakov, A.; Kiselev, A.; Kuryachii, A.P.

MS212-2 **J-HS14**

Current trends in modelling and simulations of turbulent flows
Chairperson: S. Jakirlic

14:00 2455 Application of Scale-Resolving Simulation (SRS) turbulence models in industrial CFD
Menter, F.R.; Gritskevich, M.A.; Egorov, Y.; Schütze, J.
14:20 2456 Simulation of turbulent flows in engineering practice
Peric, M.
14:40 2457 A rational approach to modeling turbulence in industrial flows
Basara, B.
15:00 2458 Large eddy stimulation using simple eddy-viscosity RANS data
Batten, P.; Goldberg, U.; Chakravarthy, S.; Batista de Jesus, A.
15:20 2459 Simulation of transient vehicle aerodynamics
Alajbegovic, A.; Duncan, B.; Kandasamy, S.; Gau, H.; Gruen, N.; Schäufele, S.
15:40 2460 Turbulence modelling in industrial applications and how it matters
Temmerman, L.; Lestriez, R.; Mehdizadeh, O.; Tartinville, B.; Léonard, B.; Hirsch, C.

MS605-3 **J-HS16**

Computational design of functional thin films
Chairpersons: D. Holec; P.H. Mayrhofer

14:00 2461 Molecular dynamics simulation study of the nanostructured surface and interface structure evolution during thin film growth
Lee, K.; Joe, M.; Kim, S.

Tuesday, September 11, 2012, 14:00 - 16:00

14:20 2462 Structural and electronic characteristics of ScGaN alloys from first principles
Zhang, S.; Holec, D.; Humphreys, C.J.; Moram, M.A.

14:40 cancelled 2463 Model structure of Diamond Like Carbon and first principles calculations of the interaction between DLC and different workpiece materials
Århammar, C.; Jiang, X.; Ahuja, R.

15:00 2464 First-principles study of the deposition of organic molecules on an iron surface
Lopez de la Torre, L.L.; Eder, S.; Vernes, A.

MS612-4 **M-HS28**

Uncertainty quantification in computational mechanics and engineering sciences
Chairpersons: W.K. Liu; C. Soize

14:00 2465 Multi-output local Gaussian process regression: applications to uncertainty quantification **(Keynote Lecture)**
Zabaras, N.J.; Bilionis, I.

14:30 2466 Bayesian uncertainty quantification and propagation in molecular dynamics simulations **(Keynote Lecture)**
Angelikopoulos, P.; Papadimitriou, C.; Koumoutsakos, P.

15:00 2467 Efficient uncertainty quantification with gradient-enhanced kriging: applications in FSI
de Baar, J.H.S.; Scholcz, T.P.; Verhoosel, C.V.; Dwight, R.P.; van Zuijlen, A.H.; Bijl, H.

15:20 2468 A stochastic collocation and perturbation approach for elliptic PDEs with random domains
Castrillón-Candás, J.E.; Nobile, F.; Tempone, R.

15:40 2469 A nonparametric stochastic model for non-Gaussian random fields with SO(n, R)-invariance
Guilleminot, J.; Soize, C.

MS622-4 **J-HS18**

Multiscale and multiphysics modelling for complex materials
Chairperson: P. Trovalusci

14:00 2470 On multi-scale approaches to fluid flow in fracturing porous media **(Keynote Lecture)**
de Borst, R.; Irzal, F.; Remmers, J.; Verhoosel, C.V.

14:30 2471 The micromorphic approach to gradient plasticity and phase transformation **(Keynote Lecture)**
Forest, S.; Ammar, K.

15:00 2472 A large deformation formulation for fluid flow in a progressively cracking porous medium
Irzal, F.; Remmers, J.

15:20 cancelled 2473 Identification of contamination flux in a domain of porous media as an inverse problem solved with artificial neural networks
Lefik, M.; Boso, D.P.

MS636-2 **M-HS32**

Meshless and related methods
Chairperson: P. Villon

14:00 2474 On the multipoint meshless FD method using the local Petrov-Galerkin approach
Jaworska, I.; Orkisz, J.

14:20 2475 A Lagrangian meshfree directional difference method for two dimensional compressible flow problem
Sun, S.; Shen, L.

14:40 2476 A smoothed moving least squares method for the application in porodynamics
Schönewald, A.; von Estorff, O.

15:00 2477 Contributions on the use of arbitrarily smooth generalized finite element approximation functions: application to crack modeling
Torres, D.A.F.; de Barcellos, C.S.; Mendonça, P.T.R.

15:20 cancelled 2478 The contact material point method and its comparison with the finite element method
Huang, P.; Hao, Z.

15:20 NEW 1834 Application of the meshless method of fundamental solutions in estimation of hydraulic flow characteristics in the permeable foundation of concrete diversion dam
Lashteh Neshaei, S.A.; Madandoust, A.

15:40 2479 A new meshless method to solve linear elasticity problems
Tampango, Y.; Potier-Ferry, M.; Koutsawa, Y.; Belouettar, S.

MS639-2 **J-UG21**

Simulation of cardiovascular procedures and devices
Chairpersons: M. Conti

14:00 2480 Multi-objective design refinement of coronary stents
Bressloff, N.; Pant, S.; Al-Lamee, K.

14:20 2481 Evaluation of carotid stent scaffolding through patient-specific finite element analysis
Auricchio, F.; Conti, M.; Ferraro, M.; Reali, A.

14:40 2482 Computational modeling of coated biodegradable stents
Debusschere, N.; De Beule, M.; Segers, P.; Dubruel, P.; Verhegghe, B.

15:00 2483 Image-based estimation of strains after aortic valve stent implantation
Gessat, M.; Hopf, R.; Pollok, T.; Mazza, E.; Falk, V.

15:20 2484 A comparison study of cavitating flow in a ventricular assist device using laminar and turbulent flow models
Chen, J.; Huang, C.

MS661-4 **J-SR20**

Numerical methods and applications of multi-physics in biomechanical modeling
Chairperson: C. Michler

14:00 2485 Hemodynamics of cerebral aneurysms with implanted flow diverters **(Keynote Lecture)**
Ventikos, Y.; Peach, T.W.; Zajarias-Fainsod, D.

14:30 2486 A study of the coupling between three-dimensional compliant and one-dimensional problems in haemodynamics **(Keynote Lecture)**
Formaggia, L.

15:00 2487 An enhanced immersed structural potential method for haemodynamic applications
Gil, A.J.; Arranz Carreno, A.; Bonet, J.; Hassan, O.

15:20 2488 Rabbit-specific modelling of pulse wave propagation in the systemic circulation to assess the effects of altered nitric oxide synthesis
Alastruey, J.; Hunt, A.; Weinberg, P.

15:40 2489 Parallel monolithic domain decomposition methods for simulating blood flows in 3D
Cai, X.

Tuesday, September 11, 2012, 14:00 - 16:00

MS663 **M-HS46**

Multi physics chip-package-board co-design
Chairperson: J. Reisinger

14:00 2490 The challenge of multi-technology and need for a coherent chip-package-board view
Reisinger, J.; Beer, G.; Pressel, K.; Wolf, J.

14:20 2491 Intelligent leadframe design: from a mechanical drawing to an "intelligized" electrical design
Della Ricca, L.; Brandtner, T.

14:40 2492 Thermal management in the design space exploration of 3D stacks and corresponding package
Heinig, A.; Knöchel, U.; Schneider, P.; Wilde, A.

15:00 2493 Chip-package-board thermal analysis tool and methodology
Lebeaut, P.; Kaiser, S.; Peltier, N.

15:20 2494 Enabling system level simulation of 3D integrated systems
Bayer, C.; Reitz, S.; Stolle, J.; Wilde, A.; Schneider, P.

15:40 2495 Co-design & co-optimization of system in package at ST Microelectronics
Imbs, Y.; Riquet, D.

MS664-1 **M-HS21**

Recent advances in boundary element and meshless methods
Chairperson: C. Zhang

14:00 2496 Calculation of vibro-acoustic structural response by fast BEM and FEM approaches **(Keynote Lecture)**
Gaul, L.; Brunner, D.; Junge, M.; Herrmann, J.

14:30 2497 Boundary element analysis of cracked anisotropic elastic and multifield materials: a review of dual BEM formulations **(Keynote Lecture)**
García-Sánchez, F.; Wünsche, M.; Sáez, A.; Dominguez, J.; Zhang, C.

15:00 2498 BEM analysis of a non-homogeneous plane containing multiple defects and swept by SH-waves
Dineva, P.S.; Rangelov, T.; Manolis, G.

15:20 2499 Determination of eigenfrequency for 3D acoustic cavity using BEM and contour integral method
Gao, H.; Matsumoto, T.; Takahashi, T.; Yamada, T.

15:40 2500 Dynamic fracture analysis of piezoelectric fiber composites by a time-domain BEM
Wünsche, M.; Zhang, C.

MS665-2 **J-HS17**

Numerical methods in combustion and exhaust aftertreatment of internal combustion engines
Chairperson: T. Lauer

14:00 2501 Advanced optimization of hybrid-electric-vehicle drivelines using engine-in-the-loop simulation
Reimers, T.; Tilch, B.; Eilts, P.

STS03 **M-HS07**

Innovative open industrial challenges featuring some environmental flight path 2050 vision goals in civil aircraft and turbo machinery
Chairpersons: J. Periaux; P. Bescond

14:00 2502 Technological challenges for future business jets
Stoufflet, B.

14:20 2503 Aerodynamic technologies for more effective, environmentally friendly air transport system
Abbas-Bayoumi, A.

14:40 2504 Long term technology challenges for air transport: an engine manufacturer's perspective
Garnier, V.

15:00 2505 The challenges of multidisciplinary analysis and optimizaton
Hirsch, C.

TS010-2 **M-HS31**

Computational engineering sciences and physics
Chairperson: B. Blostotsky

14:00 2506 Aerodynamic shape optimization of wind turbine blades using a 2D panel method with a boundary layer solver and a genetic algorithm
Tuncer, I.H.; Polat, O.; Sezer Uzol, N.

14:20 2507 Weighing in motion of railway vehicles: development and comparison of different identification/measurement techniques
Pugi, L.; Meli, E.; Rindi, A.

14:40 2508 New approach for solving Maxwell equations with strong singularity
Rukavishnikov, V.A.; Mosolapov, A.

15:00 2509 The weighted edge finite element method for time-harmonic Maxwell equations with singular solution
Rukavishnikov, V.A.; Mosolapov, A.

15:20 2510 Magnetohydrodynamical modeling and simulations of electric arc extinction in a network
Delmont, P.; Torrilhon, M.

15:40 2511 Error functional based finite element formulations for general coupled problems
Maeda, S.; Sato, K.; Takeda, H.; Yamada, M.

TS012-4 **J-HS11**

Computational fluid mechanics
Chairperson: R. Ohayon

14:00 2512 Use of computational fluid dynamic to detect pressure loss in a proton exchange membrane fuel cell
Belchor,P.M.; Forte,M.M.; Carpenter,D.; Pasqualini,A.; Blass,A.

14:20 2513 Researches of high-speed flows in slotted channel of complicated shape
Goldfeld, M.; Starov, A.V.; Timofeev, K.Y.

14:40 2514 Unsteady flow through the gap of Savonius turbine rotor
Kludzińska, K.

15:00 2515 Prediction and analysis of the helicopter rotor performances in hovering flight
Azzam, T.; Belmerabet, T.; Mekadem, M.; Hanchi, S.

15:20 2516 Steady viscous flow past an array of isothermal wires: effect of the blockage ratio on the flow and heat transfer characteristics
Lizardi, J.J.; Martinez, L.A.

TS016-2 **M-HS34**

Computational inverse problems and optimization
Chairperson: K. Bletzinger

14:00 2517 Structural optimization for metallic patch antenna using transition boundary condition method
Ohkado, M.

14:20 2518 Robust topology optimization of compliant mechanisms considering geometric and material uncertainties
Lazarov, B.S.; Schevenels, M.; Sigmund, O.

14:40 2519 Assembly optimization of two-dimensional structures by multiobjective evolutionary algorithm
Camacho Lopez, C.J.; Garzón Alvarado, D.A.

15:00 2520 Piecewise constant level set method for optimization of contact problems
Myslinski, A.M.

15:20 2521 Optimization criteria for the TDM design in slender structures excited by wind load
Morga, M.; Marano, G.C.

Tuesday, September 11, 2012, 14:00 - 16:00

TS025-4 **M-HS16**

Computational solid and structural mechanics
Chairperson: K. Schweizerhof

14:00 2522 Natural periods of vibration of outrigger braced shear walls
Nicoreac, M.P.; Hoenderkamp, J.C.D.

14:20 2523 Linear vibrations of the structures containing viscous liquids
Miras, T.; Schotté, J.; Ohayon, R.

14:40 2524 A generalized isogeometrical analysis approach for free vibration analysis of plane elasticity problems
Hassani, B.; Abolbashari, M.H.; Taheri, A.H.; Moghaddam, N.Z.

15:00 2525 Transverse isotropic elastic dynamic sphere problem
Chabaud, B.; Brock, J.; Williams, T.

15:20 2526 Strain rate intensity factors in plane-strain compression between cylindrical surfaces for the double shearing model
Lyamina, E.A.

TS027 **J-HS12**

Data and signal processing
Chairperson: H. Böhm

14:00 2527 Processing and evaluation of gear data using statistical classifiers
Tschöpe, C.; Wolff, M.

14:20 2528 Wave propagation for damage location in a stiffened plate like structure
Palacz, M.; Radzieński, M.W.; Krawczuk, M.; Doliński, Ł.

14:40 2529 Nano-scale surface evolution under curvature flows using multiscale representation of geometrical features
Jang, H.; Kim, H.; Park, Y.; Cho, S.

TS044 **J-SR63**

Numerical treatment of boundary conditions
Chairperson: E. Holm

14:00 2530 Boundary conditions for the compressible gas flow as a modification of the Riemann problem
Kyncl, M.; Pelant, J.

14:20 2531 Numerical boundary conditions for simulation of external viscous flows on regular grids
Dorodnicyn, L.W.; Alexandrov, A.

14:40 2532 Nitsche type method for handling the interface conditions in equations of elastisity
Michaeli, M.; Assous, F.

15:00 2533 Weakly enforced boundary conditions for the NURBS-based finite cell method
Ruess, M.; Bazilevs, Y.; Schillinger, D.; Zander, N.; Rank, E.

TS045-1 **M-HS42**

Parallel computing
Chairperson: S.P. Roller

14:00 2534 On the performance of a parallel direct solver used within a hybrid spectral/finite element solver for incompressible flows
Dechamps, X.; Degrez, G.; Rasquin, M.

14:20 2535 Parallel simulation of supersonic flow of the gas mixtures
Kudryashova, T.A.; Polyakov, S.

14:40 2536 Efficient usage of multiple NVIDIA GPUs for viscous compressible flows simulation
Davydov, A.A.; Shilnikov, E.V.

15:00 2537 GPGPU incomplete Cholesky conjugate gradient solver for OpenFOAM
Saijo, A.; Matsuzawa, T.

15:20 2538 Large-scale CFD applications for a hybrid GPU-based supercomputer
Chetverushkin, B.

TS061 **M-HS30**

Meshing, grid adaption
Chairperson: A. Loseille

14:00 2539 Reducing spurious drag forces when using adaptive remeshing in CFD
Milthaler, F.F.M.; Gorman, G.J.; Piggott, M.D.

14:20 2540 A node to node remeshing technique for enhanced contact analysis
Rassineux, A.; Kheris, F.

14:40 2541 3D anisotropic Delaunay meshing for ideal interfacing to block-unstructured mixed meshes using a sparse octree for metric size propagation
Wild, J.

15:00 2542 Parallel distance calculation for large octree meshes using ray tracing
Dadvand, P.; Coll, A.; Oñate, E.

15:20 2543 A fully implicit 3D elliptic mesh generator for moving boundary flow problems with large arbitrary deformations
Papaioannou, J.; Dimakopoulos, Y.; Tsamopoulos, J.

15:40 2544 A generic framework for embedded domain methods discretizing B-rep models
Sorger, C.; Tsukanov, I.; Rank, E.

16:00 - 16:30

Coffee Break

Tuesday, September 11, 2012, 16:30 - 18:30

16:30 - 18:30

MS108-5 **M-Elise Richter**

Modeling of diffuse and discontinuous failure of solids
Chairperson: J. Remmers

16:30 2700 A marching cubes based failure surface propagation concept for 3D finite elements with non-planar embedded strong discontinuities
Linder, C.; Zhang, X.

16:50 moved to MS108-2 2701 Finite elements with non homogeneous embedded discontinuities
Contrafatto, L.; Cuomo, M.; Di Venti, G.T.

17:10 2702 Analytical prediction of the fracture path and shear resistance in reinforced concrete beams
Yu, R.C.; Saucedo, L.; Ruiz, G.

17:30 2703 Modeling of the micro-damage in the fibers of composites of stochastic structure with anisotropic components by using statistical approach
Nazarenko, L.

17:50 2704 A fracture model for pearlitic steel bars using a cohesive model
Suárez Guerra, F.; Cendón, D.; Gálvez, J.C.; Atienza, J.M.; Elices, M.

18:10 2705 Cover cracking of reinforced concrete due to rebar corrosin
Gálvez, J.C.; Guzman, S.; Sancho, J.

MS126-3 **M-HS23**

Modelling of advanced composites and functionally graded materials: material microstructure, properties and behavior under service conditions
Chairperson: G. Maciejewski

16:30 2706 Discrete element simulation of powder metallurgy manufacturing process of metal-ceramic composites
Rojek, J.; Nosewicz, S.; Pietrzak, K.; Chmielewski, M.; Kaliński, D.

16:50 cancelled 2707 Damping of high velocity shock waves in composites reinforced by fibres - computational simulations
Kompis, V.; Zmindak, M.; Droppa, P.

MS129-5 **J-HS10**

Isogeometric analysis
Chairperson: C.V. Verhoosel

16:30 2708 On the maximum principle in isogeometric analysis and its application to non matching additive Schwarz domain decomposition methods
Soloveichik, I.; Bercovier, M.

16:50 2709 Isogeometric FE analysis of thin plates
Okstad, K.M.; Kvamsdal, T.; Skytt, V.

17:10 2710 Recent developments in isogeometric analysis of thin structures
Raknes, S.B.; Bazilevs, Y.; Mathisen, K.M.; Kvamsdal, T.; Okstad, K.M.

17:30 2711 Procedurally generated models for isogeometric analysis
Stein, P.

17:50 2712 Isogeometric analysis of space rods: considerations on stress locking
Cuomo, M.; Greco, L.

18:10 2713 Isogeometric shape design sensitivity analysis of stress intensity factors for mixed mode conditions using multi-resolution approach
Lee, S.; Ahn, S.; Bae, S.; Cho, S.; Choi, M.

MS201 **J-UG22**

Modelling of medium to dense gas-particle flows - Kinetic theory based methods and statistical Lagrangian methods
Chairperson: S. Pirker

16:30 2714 A frictional-kinetic model for dilute to dense gas-particle flows
Schneiderbauer, S.; Pirker, S.

16:50 2715 Effective drag law for parcel-based approaches - what can we learn from CFD-DEM?
Radl, S.; Girardi, M.; Sundaresan, S.

17:10 2716 Assessment of statistical and continuum collision models for crossing particle jets
Braun, M.; Dimitrova, D.

17:30 2717 Locally resolving large scale turbulent structures by a hybrid – Lattice Boltzmann and Finite Volume – turbulence model
Pirker, S.; Goniva, C.; Kloss, C.; Puttinger, S.; Seil, P.; Schneiderbauer, S.

17:50 2718 Particle-turbulence interactions in homogeneous and isotropic turbulence
Mallouppas, G.; George, W.; van Wachem, B.

18:10 2719 Studies of dilute and dense poly-dispersed gas-solid two-phase flows using the EUgran+ model
Schellander, D.; Schneiderbauer, S.; Pirker, S.

MS203-1 **J-HS17**

Higher-order methods for aerospace applications
Chairperson: N. Kroll

16:30 2720 IDIHOM - a European project on industrialization of high-order methods for aeronautical applications
Kroll, N.

16:50 2721 A consistent finite element approach to large eddy simulation revisited with higher-order elements **(Keynote Lecture)**
Chalot, F.; Dagrau, F.; Galdeano, S.; Levasseur, V.; Mallet, M.; Normand, P.

17:20 2722 Development of the discontinuous Galerkin method for high accuracy DNS and LES computations of turbulent flows in turbomachinery **(Keynote Lecture)**
Hillewaert, K.; Carton de Wiart, C.; Luccioni, R.; Geuzaine, P.

17:50 2723 On the application of the discontinuous Galerkin method to turbomachinery flows
Cherednichenko, S.; Frey, C.; Ashcroft, G.

18:10 2724 Higher order and adaptive discontinuous Galerkin methods applied to 3d turbulent aerodynamic flows
Hartmann, R.

MS205-3 **J-SR62**

Non-Newtonian fluid flows: numerical methods and applications
Chairperson: R.J. Poole

16:30 2725 Numerical investigation of electro-elastic instabilities in a contraction-expansion
Afonso, A.M.; Pinho, F.T.; Alves, M.A.

16:50 2726 Design of optimized microfluidic T-channels for extensional rheology
Galindo-Rosales, F.J.; Oliveira, M.S.N.; Alves, M.A.

17:10 2727 Squeezing simulation of Non-Newtonian fluids using VOF, DEVSS and dynamic mesh methods
Al-Baldawi, A.; Wünsch, O.

17:30 2728 Numerical assessment of mass conservation on a MAC-type method for viscoelastic free-surface flows
Martins, F.P.; Oishi, C.M.; Sousa, F.S.; Cuminato, J.A.

Tuesday, September 11, 2012, 16:30 - 18:30

17:50 2729 A fast explicit-implicit integration method for non-linear integral constitutive models casted in a Lagrangian finite element framework: application to the filament stretching of pressure sensitive adhesives
Dimakopoulos, Y.; Kondylis, S.; Papaioannou, J.; Tsamopoulos, J.

18:10 2730 A numerical approach to viscoplastic free surface flows in complex 3D geometries
Nikitin, K.; Olshanskii, M.; Terehov, K.; Vassilevski, Y.

MS209-3 **J-HS13**

Numerical modeling of "separated" and "dispersed" two-phase flows
Chairperson: A. Murrone

16:30 2731 The first step towards extension of the mass-conserving level-set method to discretisations using general polyhedral control volumes
Raees, F.; der Heul, D.R.V.; Vuik, C.

16:50 2732 A mass-conserving level set method for pipe flows in cylindrical coordinates
Oud, G.; der Heul, D.R.V.; Vuik, C.; Henkes, R.

MS305-1 **M-HS47**

High order finite element methods - analysis and computations
Chairperson: J. Schöberl

16:30 2733 Mixed and nonconforming families of elements for linear elasticity **(Keynote Lecture)**
Gopalakrishnan, J.; Guzman, J.

17:00 2734 Robust DPG method for convection-dominated diffusion problems **(Keynote Lecture)**
Demkowicz, L.F.; Heuer, N.

17:30 2735 Stable mixed finite element approximations in elasticity
Chama, A.; Reddy, D.

17:50 2736 A posteriori error estimates of higher-order mixed finite elements for frictional contact problems in linear elasticity and elastoplasticity
Schröder, A.; Wiedemann, S.

18:10 2737 A high order discontinuous Galerkin method for the Boltzmann equation
Kitzler, G.; Schöberl, J.

MS403-1 **M-HS30**

Reduced order modeling strategies for parametrized PDEs
Chairperson: K. Veroy

16:30 2738 An iterative reduced basis scheme for homogeneous domain decomposition
Maier, I.; Haasdonk, B.

16:50 2739 A certified reduced basis approach for parametrized linear-quadratic optimal control problems
Kärcher, M.; Grepl, M.

17:10 2740 A reduced computational framework for viscous flows in parametrized geometries with physical uncertainties
Rozza, G.; Lassila, T.M.; Manzoni, A.

17:30 2741 A static condensation reduced basis element method for parabolic problems
Vallaghe, S.; Patera, A.

17:50 2742 Port reduction in static condensation: application to the reduced basis static condensation element method
Eftang, J.L.; Rønquist, E.; Patera, A.

MS600-1 **J-UG21**

Multiscale and multiphysics modelling in bone mechanobiology (3MBM)
Chairperson: R. Hambli

16:30 2743 Bone remodeling: role of the osteocyte mechanoreceptor system **(Keynote Lecture)**
Benhamou, C.; Rochefort, G.Y.

17:00 2744 In vivo physiome maps for the simulation of bone remodeling **(Keynote Lecture)**
Müller, R.; Levchuk, A.; Badilatti, S.; Zwahlen, A.; Schulte, F.; Lambers, F.M.; Weigt, C.; Webster, D.; Kuhn, G.

17:30 2745 Toward a patient-specific simulation of bone remodeling
van Rietbergen, B.; Christen, P.; Colloca, M.; Ito, K.

17:50 2746 Mechanical behavior of single mineralized collagen fibril using finite element simulation coupled to quasi-brittle damage law
Barkaoui, A.; Bettamer, A.; Hambli, R.

18:10 moved to MS600-3 2747 A three-scale finite element investigation into the effects of tissue mineralisation and lamellar organisation on the mechanics of cortical and trabecular bone
Vaughan, T.J.; McCarthy, C.T.; McNamara, L.M.

MS612-5 **M-HS28**

Uncertainty quantification in computational mechanics and engineering sciences
Chairpersons: N.J. Zabaras; C. Papadimitriou

16:30 2748 Subcell resolution in uncertainty quantification
Witteveen, J.A.S.; Iaccarino, G.

16:50 2749 Chernoff Tau-Leap
Karlsson, J.; Moraes, A.; Tempone, R.; Vilanova, P.

17:10 2750 Equations for the probabilistic moments of the solution of a stochastic partial differential equation
Bonizzoni, F.; Buffa, A.; Kumar, R.; Nobile, F.

17:30 2751 High-dimension polynomial chaos expansions of effective constitutive equations for hyperelastic heterogeneous random microstructures
Clement, A.; Soize, C.; Yvonnet, J.

17:50 2752 Fast estimation of expected information gain for Bayesian experimental design based on Laplace approximation
Long, Q.; Scavino, M.; Tempone, R.; Wang, S.

18:10 2753 An adaptive Tau-Leap discretization of pure jump processes arising in kinetic Monte Carlo models
Karlsson, J.; Katsoulakis, M.; Szepessy, A.; Tempone, R.

MS618-1 **M-HS50**

Computational structural stability
Chairperson: W. Wunderlich

16:30 2754 Semi-analytical element for geometric and material non-linear dynamic analysis of steel members subject to blast loading **(Keynote Lecture)**
Bradford, M.A.; Heidarpour, A.

17:00 2755 Buckling behavior and strength of steel trussed thin-walled beams: numerical, experimental and design results **(Keynote Lecture)**
Batista, E.; Landesmann, A.; Franco, J.M.

17:30 2756 Increase of buckling resistance of thin-walled structures without changing mass, material, geometry, or boundary conditions
Rammerstorfer, F.G.; Bilik, C.

17:50 2757 Categorization of buckling by means of spherical geometry
Mang, H.A.

Tuesday, September 11, 2012, 16:30 - 18:30

MS622-5 **J-HS18**

Multiscale and multiphysics modelling for complex materials

Chairperson: L. Gambarotta

16:30 2758 Static nonlinear configurations and free vibrations of a MEMS with thermoelastic and squeeze-film effects
Belardinelli, P.; Brocchini, M.; Demeio, L.; Lenci, S.

16:50 2759 Determination of small angle scattering patterns of bone tissues based on highly ordered collagen scaffold concept
Henits, P.; Hellmich, C.

17:10 2760 Homogenization modeling of multigrain and multidomain structures in piezoelectric materials
Uetsuji, Y.; Kuramae, H.; Tsuchiya, K.

17:30 2761 Computation of a Fokker-Planck-equation-based multi-scale model for complex flows using the IRBFN method
Tran, C.; Mai-Duy, N.; Tran-Cong, T.

17:50 2762 Nonuniform TFA homogenization procedure for micro-macro analyses
Sepe, V.; Marfia, S.; Sacco, E.

MS635 **J-HS15**

The stochastic finite element method: recent advances

Chairpersons: M. Papadrakakis; G. Stefanou

16:30 2763 Reduced basis methods for quadratically nonlinear partial differential equations with stochastic influences
Urban, K.; Wieland, B.

16:50 2764 Buckling load and displacement variability of cylindrical shells with stochastic material and geometric properties
Stefanou, G.; Papadopoulos, V.; Papadrakakis, M.

17:10 2765 I-section steel frames with random imperfections
Soimoiris, G.; Papadopoulos, V.; Papadrakakis, M.

MS638-1 **M-HS48**

Error estimation and modeling adaptation in computational mechanics

Chairperson: L. Chamoin

16:30 2766 Guaranteed error control in CPDE **(Keynote Lecture)**
Carstensen, C.

17:00 2767 Error estimation in a non-overlapping domain decomposition framework for highly heteregeneous problems **(Keynote Lecture)**
Parret-Fréaud, A.; Rey, C.; Gosselet, P.

17:30 2768 Error control in reliability analysis of cracked structures
Gallimard, L.

17:50 2769 Adaptive P1-triangular FEM for 2D crack propagation analysis using the new constant-free residual-based explicit error estimator
Gerasimov, T.; Stein, E.

MS642-1 **J-SR64**

Computational and experimental methods for mechanical analyses of microbial biofilms

Chairperson: A. Bolea Albero

16:30 2770 Mechanical characterisation of biofilm and their significance for material modelling
Böl, M.; Ehret, A.E.; Bolea Albero, A.; Hellriegel, J.; Krull, R.

16:50 2771 Does multi-scale imaging help to understand biofilm physics?
Horn, H.; Wagner, M.; Matruglio, R.

17:10 2772 Use of the cone/plate rheometer technology to assess the mechanical properties of biofilms and reconstituted exopolymeric matrices
Lembré, P.; Seyer, D.; Di Martino, P.

17:30 2773 A finite element approach for the coupled numerical simulation of fluid-structure interaction and mass transfer of moving biofilm structures
Coroneo, M.; Wall, W.A.

17:50 2774 Removing biofilms by fluid flow: the endodontic point of view
van der Sluis, L.; Verhaagen, B.; Boutsioukis, C.; Versluis, M.

18:10 2775 A network model for studying the mechanics of biofilms
Ehret, A.E.; Bolea Albero, A.; Böl, M.

MS648-1 **M-HS41**

Computational micromechanics of wood and cellulose-fibre based materials

Chairperson: T.K. Bader

16:30 2776 Dynamic fracture of thin 3D random fiber networks using a particle model
Persson, J.; Isaksson, P.

16:50 2777 Effects of fibre agglomeration on strength of wood-fibre composites
Joffre, T.; Miettinen, A.; Isaksson, P.; Wernersson, E.; Gamstedt, E.K.

17:10 2779 Fluid-structure interactions in random fibre networks
Uesaka, T.; Wiklund, H.; Holmvall, M.

17:30 2780 Single fiber-fiber bond strength measurements using atomic force microscopy
Ganser, C.; Schmied, F.J.; Fischer, W.J.; Hirn, U.; Schennach, R.; Teichert, C.

17:50 2781 Shear testing of individual fibre-fibre bonds
Fischer, W.J.; Hirn, U.; Bauer, W.; Schennach, R.

MS651-1 **J-HS12**

Optimization and control methodologies for aerodynamic design

Chairpersons: N.R. Gauger; M. Widhalm

16:30 2782 Shape optimization based on surface gradients
Schmidt, S.

16:50 2783 Efficient polar optimization of transport aircraft in transonic RANS flow using adjoint gradient based approach
Ilic, C.; Widhalm, M.; Brezillon, J.

17:10 2784 Topology optimization in fluid mechanics using adjoint-based truncated Newton
Papoutsis-Kiachagias, E.M.; Zymaris, A.S.; Papadimitriou, D.I.; Giannakoglou, K.

17:30 2785 Aircraft geometry parameterization with high-end CAD-software for design optimization
Ronzheimer, A.

17:50 2786 Multidisciplinary optimization of aircraft systems
Nardin, L.; Poloni, C.; Hitzel, S.M.; Sorensen, K.A.; Rieger, H.

18:10 2787 Optimization methods applied to aerodynamic flow control
Labroquère, J.; Duvigneau, R.

MS655 **J-SR10**

Shape memory materials: multiscale modelling and simulation

Chairpersons: S. Reese; E. Artioli

16:30 2788 Phase-field modeling of twin boundary motion in magnetic shape memory alloys
Jainta, M.; Mennerich, C.; Wendler, F.; Nestler, B.

16:50 2789 Grain size effects in nanocrystalline shape memory materials
Quek, S.S.; Ahluwalia, R.; Wu, D.T.

17:10 2790 Refined shape memory alloys model taking into account martensite reorientation
Auricchio, F.; Bonetti, E.; Scalet, G.; Ubertini, F.

17:30 2791 A linked interpolation triangular element for SMA shells
Artioli, E.; Marfia, S.; Sacco, E.

Tuesday, September 11, 2012, 16:30 - 18:30

17:50 2792 Microplane modeling of martensite reorientation in shape memory alloys
Mehrabi, R.; Kadkhodaei, M.; Arbab Chirani, S.

MS661-5 **J-SR20**

Numerical methods and applications of multi-physics in biomechanical modeling
Chairperson: A. Figueroa

16:30 2793 A fluid-structure interaction model to simulate mitral valve regurgitant flow
Quaini, A.; Canic, S.; Glowinski, R.; Igo, S.; Hartley, C.; Zoghbi, W.; Litlle, S.

16:50 2794 A fluido-chemical model to predict the growth of intra-luminal thrombus in abdominal aortic aneurysms
Biasetti, J.; Gasser, T.C.

17:10 2795 Computational modeling of transport phenomena in biomechanics
Yoshihara, L.; Comerford, A.; Bauer, G.; Klöppel, T.; Vuong, A.; Wall, W.A.

17:30 2796 Two-scale modeling of fluid-saturated double-porous media undergoing large deformation
Rohan, E.; Lukes, V.

17:50 2797 Numerical accuracy and efficiency assessment of the quasi-implicit, semi-implicit and fully explicit characteristic based split (CBS) projection methods for modelling blood flow
Bevan, R.; Nithiarasu, P.; van Loon, R.

MS664-2 **M-HS21**

Recent advances in boundary element and meshless methods
Chairperson: V. Sladek

16:30 2798 Analysis of stiffened plates with different materials by the boundary element method
Fernandes, G.R.; Neto, J.R.

16:50 2799 Cracked anisotropic plates under out-of-plane bending by a hypersingular BEM
Alba, P.; Wünsche, M.; García-Sánchez, F.; Sáez, A.

17:10 2800 Analysis of elastoplastic problems with centrifugal load by triple-reciprocity boundary element method
Ochiai, Y.; Sladek, V.

17:30 2801 Frequency and time domain BEM in fracture dynamic contact problems - comparative study
Zozulya, V.

17:50 2802 Parallelization of convolution quadrature based boundary element method for general anisotropy
Saitoh, T.; Furukawa, A.; Hirose, S.; Zhang, C.

STS05 **M-HS07**

Research and industrial applications
Chairperson: C. Mockett

16:30 2803 Large-eddy simulation of particle-laden flow
Geurts, B.J.

16:50 2804 LES of aeroengine turbines
Tyacke, J.C.; Tucker, P.G.; Jefferson-Loveday, R.; Nagabushana Rao, V.; Watson, R.; Naqavi, I.

17:10 2805 CFD-based wave-number analysis of a genericside-view mirror towards aero-vibroacoustic interior noise transmission
Mendonca, F.; Shaw, T.

17:30 2806 Challenges of LES for gas turbine compressors
Page, G.J.

17:50 2807 Detached-eddy simulation for helicopter fuselage aerodynamics
Mockett, C.; Fuchs, M.; Le Chuiton, F.; Thiele, F.

18:10 2808 Scale-resolving simulations in industrial CFD - Models and best practice
Menter, F.R.; Gritskevich, M.A.; Egorov, Y.; Schütze, J.

TS010-3 **M-HS31**

Computational engineering sciences and physics
Chairperson: J. Gerstmayr

16:30 2809 Computational simulation of muscle function in crouched gait in children with spastic cerebral palsy
Hainisch, R.; Gföhler, M.; Pandy, M.

16:50 2810 Computer simulation of seismic behavior of building structures using SIMULINK of MATLAB
Blostotsky, B.; Efraim, E.

17:10 2811 Comparison of algorithms for solving large-scale optimization problems with bound constraints for meteorological data assimilation
Horibata, Y.

17:30 2812 Simulation of orientation distribution of fibre model
Sattari, M.; Tuomela, J.

17:50 2813 Numerical simulations on piezoresistivity of nanofiller and polymer based nanocomposites
Hu, N.; Alamusi, A.

TS012-5 **J-HS11**

Computational fluid mechanics
Chairperson: H. Steinrück

16:30 2814 Steady streamline structure of three-dimensional lid-driven cavity flows
Adachi, S.; Ishii, K.

16:50 2815 Improved Adomian decomposition method for generalized Burger's-Fisher equation
Ocvirk, E.; Mestrovic, M.

17:10 2816 Boundary conditions for semi-implicit low Mach number flow calculation
Moguen, Y.; Dick, E.; Bruel, P.

TS016-3 **M-HS34**

Computational inverse problems and optimization
Chairperson: M. Colaco

16:30 2817 A new efficient algorithm for finding all solutions of the inverse kinematics problem of 6R general manipulators
Rudny, T.I.

16:50 2818 Influence of discretization and model errors on inverse computational fluid dynamics: application to a water pipe junction
Waeytens, J.; Chatellier, P.; Bourquin, F.

17:10 2819 On some concepts proposed for evolutionary algorithms acceleration
Orkisz, J.; Glowacki, M.

Tuesday, September 11, 2012, 16:30 - 18:30

TS025-5 **M-HS16**

Computational solid and structural mechanics
Chairperson: M. Okrouhlik

16:30 2820 Parallel large-scale seismic response analysis of super-high-rise steel building fully considering soil-structure interaction
Miyamura, T.; Takaya, S.; Tanaka, S.; Ogino, M.; Hori, M.

16:50 2821 Bearing capacity of embedded foundation in porous materials
Figueiredo, F.C.; Borges, L.A.; Pontes, I.D.D.S.; Costa, L.M.

17:10 2822 Numerical analysis of construction methods of metro tunnel under weathered ground
Zhang, J.X.; Yuan, Y.

17:30 2824 Computer modelling of strengthening of brick masonry cross vaults with FRP composites
Berkowski, P.; Szołomicki, J.; Barański, J.

17:50 2825 Finite element modeling of timber-concrete composite beams under short-term loadings
Khorsandnia, N.; Valipour, H.R.; Crews, K.

TS040-1 **J-HS16**

Numerical algorithms for continuum approaches
Chairperson: H.E. Pettermann

16:30 2826 Numerical heat transfer - generalization of temporary temperature field correction method
Mochnacki, B.; Majchrzak, E.

16:50 2827 The splitting finite-difference scheme for two-dimensional heat conduction equation with four nonlocal integral conditions
Sajavicius, S.

17:10 2828 Development of high order convective schemes considering the source
Pascau, A.; Garcia, N.; Alcrudo, F.

17:30 cancelled 2829 Deformation effects on the motion of a non-neutrally drop in plane Poiseuille flow
Bayareh, M.

17:50 2830 On efficient numerical solution of time-periodic wave equation using controllability technique and mixed finite elements
Kähkönen, S.; Glowinski, R.; Rossi, T.; Mäkinen, R.

TS045-2 **M-HS42**

Parallel computing
Chairperson: I. Herrera

16:30 2831 Distributed octree mesh infrastructure for flow simulations
Klimach, H.; Hasert, M.; Zudrop, J.; Roller, S.P.

16:50 2832 Object-oriented code MARPLE for 3D radiative magnetohydrodynamics simulations on high-performance computer systems
Gasilov, V.; Boldarev, A.; Dyachenko, S.; Olkhovskaya, O.; Bagdasarov, G.; Boldyrev, S.; Gasilova, I.

TS052-1 **J-SR63**

Unsteady flow computation
Chairperson: A. Nicolás

16:30 2833 Unsteady simulation of the flow during the deployment of high-lift systems
Renard, N.; Wild, J.

16:50 2834 Numerical investigation of unsteady behavior of laminar separation bubble near stall conditions
Almutairi, J.H.; AlQuadi, I.M.

17:10 2835 Time-linearized simulation of unsteady transonic flows with shock-induced separation
Thormann, R.; Nitzsche, J.; Widhalm, M.

17:30 2836 Frequency-domain Navier-Stokes computations of transonic nozzle flows
Labit, S.; Philit, M.; Chassaing, J.; Ferrand, P.; Aubert, S.

20:30

Organ Concert at St. Stephen's Cathedral

Wednesday, September 12, 2012, 08:00 - 10:00

08:00 - 08:40

SPL10 **M-Audimax**

Semi-Plenary Lecture
Chairperson: A. Buffa

08:00 3000 Archetype blending continuum theory for material complexes design for controlled fracture patterns
Liu, W.K.

SPL11 **J-HS10**

Semi-Plenary Lecture
Chairperson: M. Ortiz

08:00 3001 On the modelling and computation of nano-sized solids with surface and interface thermomechanics
Steinmann, P.; Javili, A.; McBride, A.

SPL12 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: P. Hansbo

08:00 3002 Efficiency and limitations of automation of computational modeling
Korelc, J.

08:40 - 09:20

SPL13 **M-Audimax**

Semi-Plenary Lecture
Chairperson: B. Schrefler

08:40 3003 A new perspective for large-scale simulations in computational mechanics
Papadrakakis, M.

SPL14 **J-HS10**

Semi-Plenary Lecture
Chairperson: A. Griewank

08:40 3004 Stabilized Galerkin meshfree methods: convergence and stability
Chen, J.S.; Chi, S.W.; Hillman, M.; Rüter, M.

SPL15 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: D. Gross

08:40 3005 Integral representation of contact constraints as a means to robust and accurate representation of interfacial behavior in large deformation mechanics
Laursen, T.

09:20 - 10:00

SPL16 **M-Audimax**

Semi-Plenary Lecture
Chairperson: H.A. Mang

09:20 3006 Compensating for errors of ABAQUS, LS-DYNA, ANSYS and NASTRAN in finite strain and bifurcation analysis of incrementally highly orthotropic or compressible solids
Bažant, Z.P.; Gattu, M.; Yu, Q.; Vorel, J.; Waas, A.; Ji, W.

SPL17 **J-HS10**

Semi-Plenary Lecture
Chairperson: A. Combescure

09:20 3007 PGD in computational mechanics: basic features, verification and engineering applications
Ladeveze, P.; Chamoin, L.; Neron, D.

SPL18 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: M. Hartmann

09:20 3008 From atoms to ductility: the mechanisms of dynamic strain aging and its impact on ductility in Al-Mg
Curtin, W.; Bower, A.; Chakravarthy, S.; Keralavarma, S.

10:00 - 10:30
Coffee Break

Wednesday, September 12, 2012, 10:30 - 12:30

10:30 - 12:30

MS102-1 **J-SR10**

Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials
Chairperson: J. Yvonnet

10:30 3100 A two-scale model for pure polymer and polymer composites **(Keynote Lecture)**
Greene, M.S.; Liu, W.K.

11:00 3101 A multiscale-multiphysics computational framework for modeling embrittlement in heterogeneous materials **(Keynote Lecture)**
Oskay, C.; Yan, H.

11:30 3102 Model adaptivity for a multi-scale analysis of composite sub-structures
Hajibeik, N.; Temizer, I.; Loehnert, S.; Wriggers, P.

11:50 3103 Thermodynamical twin modeling in crystal plasticity framework for hcp metals
Terada, K.; Shibutani, S.; Kato, J.; Kyoya, T.; Koike, J.; Ando, D.

12:10 3104 Computational homogenisation of polycrystalline elastoplastic microstructures at finite deformations
Lehmann, E.; Loehnert, S.; Wriggers, P.

MS104-1 **M-Elise Richter**

Damage to fracture strategies, elasto-plastic crack initiation and propagation
Chairperson: S. Feld-Payet

10:30 3105 Damage and fracture of materials submitted to high strain rates - a thermomechanically implicit coupled approach with element erosion **(Keynote Lecture)**
Jeunechamps, P.; Boman, R.; Papeleux, L.; Ponthot, J.

11:00 3106 Damage growth modeling using the Thick Level Set (TLS) approach **(Keynote Lecture)**
Chevaugeon, N.; Moës, N.; Bernard, P.E.

11:30 3107 Damage-based crack initiation and propagation
Minnebo, H.; Van Hoof, T.; Pierard, O.

11:50 3108 Damage based criterion for crack initiation and propagation in ductile metals
Seabra, M.R.R.; Cesar de Sa, J.M.A.; Sustaric, P.; Rodic, T.

12:10 3109 An adaptive cohesive zone model for arbitrary 3D crack growth in elastic-plastic structures
Chiaruttini, V.; Geoffroy, D.; Riolo, V.; Bonnet, M.

MS105 **M-HS42**

Heterogeneties and uncertainties in inelastic materials
Chairpersons: A. Ibrahimbegovic; H.G. Matthies

10:30 3110 Failure models for prediction of crack-spacing and opening for reinforced composites with long fibers and probability framework
Ibrahimbegovic, A.

10:50 3111 Inverse problems for nonlinear elastoplastic models via Bayesian parameter identification
Rosic, B.V.; Pajonk, O.; Litvinenko, A.; Matthies, H.G.

11:10 3112 A neural network based elasto-plasticity material model
Palau, T.; Kuhn, A.; Nogales, S.; Böhm, H.; Rauh, A.

MS119-1 **J-HS13**

Innovative numerical methods for interface propagation in solids or coupled fluid solid problems
Chairpersons: P. Massin; Y. Sudhakar

10:30 3113 Coupled crack propagation geometrical instability finite element prediction
Combescure, A.; Rethore, J.

10:50 3114 Gaussian quadrature rules for arbitrary cut-volumes in embedded interface methods
Sudhakar, Y.; Wall, W.A.

11:10 3115 Discussion on different level set update schemes for mixed mode crack propagation and partitioned crack fronts
Colombo, D.; Massin, P.A.

11:30 3116 A numerical setup for the study of configurational forces driven interfaces
Valance, S.

11:50 cancelled 3117 An optimization-based finite element method for time continuous cohesive modeling of fracture
Papoulia, K.D.

MS129-6 **J-HS10**

Isogeometric analysis
Chairperson: G. Sangalli

10:30 3118 Isogeometric analysis of steady free-surface flow using a shape-linearized Newton solver **(Keynote Lecture)**
Verhoosel, C.V.; van Zwieten, G.; van der Zee, K.G.; van Brummelen, H.

11:00 3119 Isogeometric collocation methods for elasticity **(Keynote Lecture)**
Auricchio, F.; Beirao da Veiga, L.; Hughes, T.; Reali, A.; Sangalli, G.

11:30 3120 Applications of isogeometric finite elements
Calo, V.M.; Collier, N.; Dalcin, L.; Pardo, D.; Paszynski, M.

11:50 3121 Quadrature rules for NURBS-based isogeometric analysis
Auricchio, F.; Calabrò, F.; Hughes, T.; Reali, A.; Sangalli, G.

12:10 3122 The use of local least-squares for the enforcement of Dirichlet boundary conditions in isogeometric analysis
Govindjee, S.; Strain, J.; Mitchell, T.J.; Taylor, R.L.

MS203-2 **J-HS17**

Higher-order methods for aerospace applications
Chairperson: R. Hartmann

10:30 3123 High order residual distribution scheme for the RANS equations
Abgrall, R.; De Santis, D.; Ricchiuto, M.

10:50 3124 Discontinuous Galerkin method on hybrid meshes for internal and external flow configurations
Couaillier, V.G.; Renac, F.; Gerald, S.; Martin, E.; de la Llave Plata, M.

11:10 3125 Investigation of stabilized high order schemes for underresolved multi-scale flows
Bolemann, T.; Gassner, G.; Beck, A.; Munz, C.

11:30 3126 High-order spectral/hp methods for aerodynamic applications
Moxey, D.; Hazan, M.; Sherwin, S.; Peiro, J.

11:50 3127 Hybridizable discontinuous Galerkin p-adaptivity for fluid problems
Giorgiani, G.; Fernández-Méndez, S.; Huerta, A.

12:10 3128 The flow around NACA0012 revisited using very high order accuracy
Kupiainen, M.; Eliasson, P.; Nordström, J.

Wednesday, September 12, 2012, 10:30 - 12:30

MS205-4 **J-SR62**

Non-Newtonian fluid flows: numerical methods and applications
Chairperson: M.A. Alves

10:30 3129 A weighted residual method for 2-layer flows with yield stress fluids **(Keynote Lecture)**
Alba, K.; Taghavi, S.M.; Frigaard, I.

11:00 3130 Recent progress on the LS-STAG immersed boundary method for the computation of viscoelastic and non-Newtonian flows **(Keynote Lecture)**
Botella, O.; Cheny, Y.

11:30 3131 Boger fluid flow around a confined cylinder: experiments and simulations
Ribeiro, V.M.; Coelho, P.M.; Pinho, F.T.; Alves, M.A.

11:50 3132 Numerical study of non-Newtonian viscoelastic compressible fluid flow in a planar contraction/expansion
Matos, H.M.; Oliveira, P.J.

MS305-2 **M-HS47**

High order finite element methods - analysis and computations
Chairperson: L.F. Demkowicz

10:30 3133 On the time-stepping stability of continuous mass-lumped and discontinuous Galerkin finite elements for the 3D acoustic wave equation
Zhebel, E.; Minisini, S.; Kononov, A.; Mulder, W.A.

10:50 3134 Convergence of an automatic hp-adaptive finite element method for Maxwell's equations
Bürg, M.

11:10 3135 Arbitrary-order nodal mimetic discretizations of elliptic problems on polygonal meshes
Manzini, G.; Beirao da Veiga, L.

11:30 3136 The geometric basis of mimetic spectral approximations
Gerritsma, M.; Kreeft, J.; Palha, A.

11:50 3137 High order Hardy space infinite elements for exterior Maxwell problems
Nannen, L.; Hohage, T.; Schädle, A.; Schöberl, J.

MS403-2 **M-HS30**

Reduced order modeling strategies for parametrized PDEs
Chairperson: G. Rozza

10:30 3138 A certified reduced basis method for the instationary Stokes equations
Gerner, A.; Veroy, K.; Reusken, A.

10:50 3139 Nonlinear model order reduction with local reduced-order bases for hyper reduction
Amsallem, D.; Zahr, M.J.; Farhat, C.

11:10 3140 Interpolating unsteady paramaterised CFD solutions using radial basis functions and proper orthogonal decomposition
Walton, S.; Hassan, O.; Morgan, K.

11:30 3141 A computational framework for certified reduced basis methods: applications to multiphysics problems
Chabannes, V.; Daversin, C.; Prud'homme, C.; Samake, A.; Trophime, C.; Veys, S.

11:50 3142 Reduced basis methods for data mining
Maday, Y.

MS404-1 **J-HS15**

Automation of computational modeling by advanced software tools and techniques
Chairperson: J. Korelc

10:30 3143 An object-oriented Java tensor approach for formal finite elements derivation **(Keynote Lecture)**
Eyheramendy, D.; Saad, R.

11:00 3144 Some experiments around a new Python-like language for dynamic meta-programming and automated field computations **(Keynote Lecture)**
Leclerc, H.

11:30 3145 Automated target-specific code generation for finite element methods in the FEniCS framework
Tartarini, D.; Wells, G.N.

11:50 3146 Advances in Feel++: a domain specific embedded language in C++ for partial differential equations
Chabannes, V.; Daversin, C.; Doyeux, V.; Ismail, M.; Prud'homme, C.; Samake, A.; Trophime, C.; Veys, S.

12:10 3147 Automation of PDE constrained optimization
Alnæs, M.S.; Mardal, K.

MS600-2 **J-UG21**

Multiscale and multiphysics modelling in bone mechanobiology (3MBM)
Chairperson: R. Müller

10:30 3148 Integrated remodeling to fracture finite element model of human proximal femur behaviour
Hambli, R.

10:50 3149 How to learn about bone diseases from the measured bone material heterogeneity
Lukas, C.; Kollmannsberger, P.; Ruffoni, D.; Fratzl, P.; Roschger, P.; Weinkamer, R.

11:10 3150 Numerical simulation of the spatio-temporal evolution of cortical porosity in osteoporosis
Pivonka, P.; Buenzli, P.R.; Scheiner, S.; Thomas, C.D.L.; Clement, J.G.

11:30 3151 Stimulating inhibitors: on the controversial role of OPG in bone metastases
Ryser, M.D.; Qu, Y.; Komarova, S.V.

11:50 3152 Mathematical modeling of myeloma bone disease
Ayati, B.

12:10 3153 Microstructure, interfaces, composition - towards better microscale experimentation and models of bone
Thurner, P.; Katsamenis, O.L.; Nobakhti, S.; Andriotis, O.; Chong, H.; Limbert, G.

Wednesday, September 12, 2012, 10:30 - 12:30

MS612-6 **M-HS28**

Uncertainty quantification in computational mechanics and engineering sciences
Chairperson: C. Soize

10:30 3154 Bayesian assimilation of multi-fidelity stochastic finite element models
DiazDelaO, F.A.; Adhikari, S.; Friswell, M.I.

10:50 3155 Updating the probabilistic density function related to an uncertain parameter of a model for producing voice, using Bayesian approach
Cataldo, E.; Soize, C.

11:10 3156 Gaussian mixture model and Bayesian methods in time series-based structural damage detection
Słoński, M.

11:30 3157 Stochastic reduced-order model for dynamical structures having a high modal density in the low-frequency range
Arnoux, A.; Batou, A.; Soize, C.; Gagliardini, L.

11:50 3158 cancelled Optimization of the aluminum and steel telecommunication towers using the generalized perturbation-based stochastic finite element method
Kaminski, M.; Solecka, M.

12:10 3159 On stability analysis of steel telecommunication towers with random parameters
Szafran, J.; Kaminski, M.; Świta, P.

MS618-2 **M-HS50**

Computational structural stability
Chairperson: W. Wunderlich

10:30 3160 Stability analysis of shells employing a coupled two-scale model
Gruttmann, F.; Wagner, W.

10:50 3161 Snap-through of curved structures - a non-linear thermomechanical coupled field problem
Chandra, Y.; Stanciulescu, I.; Moghaddasie, B.

11:10 3162 Resonance in the Hopf-Hopf interaction of a spatial fluid conveying tube
Steindl, A.

11:30 3163 A singular-free procedure for the direct computation of bifurcation points of shell structures
Falkner, F.

11:50 3164 On the buckling mode interaction and imperfection sensitivity analysis
Sokol, T.

12:10 3165 Characteristics of the solution of the consistently linearized eigenproblem for lateral torsional buckling
Aminbaghai, M.; Mang, H.A.

MS622-6 **Multiscale and multiphysics modelling for complex materials** **J-HS18**

Chairperson: G. Maier

10:30 3166 Poromechanics and multiscale approaches of swelling in nanoporous materials **(Keynote Lecture)**
Vermorel, R.; Pijaudier-Cabot, G.; Miqueu, C.; Mendiboure, B.

11:00 3167 A viscoplastic microstructure-based model for the thermo-mechanical response of cast irons
Pina, J.C.; Kouznetsova, V.; Geers, M.

11:20 3168 cancelled Description of deformation process due to heat transfer in a two-phase polycrystalline composite structure
Sadowski, T.; Golewski, P.

11:20 3169a NEW Our multiscale model for diffusion in complex media with surface interaction effects
Kojic, M.; Milosevic,M.; Kojic, N.; Ferrari, M.; Ziemys, A.

11:40 3169 Size of RVE in random micropolar composites
Murrali, A.; De Bellis, M.L.; Trovalusci, P.; Ostoja-Starzewski, M.

MS630-1 **M-HS23**

Advances in computational modelling of recrystallization and grain growth
Chairperson: D. Zöllner

10:30 3170 Phase field modelling of recrystallization and grain growth in advanced steels **(Keynote Lecture)**
Militzer, M.; Zhu, B.; Toloui, M.; Shahandeh, S.

11:00 3171 Hybrid computational model for microstructural and compositional evolution **(Keynote Lecture)**
Homer, E.; Tikare, V.; Holm, E.

11:30 3172 Estimating the mean width of grains in a voxel-based microstructure representation
Chang, K.; Krill III, C.E.; Chen, L.

11:50 3173 Massive phase-field simulations of grain structure evolution: comparison of surface energy formulations and their efficient simulation
Reichardt, M.B.; Selzer, M.; Nestler, B.; Khorashadizadeh, A.; Raabe, D.

12:10 3174 Modelling Zener pinning with a full field method based on a level set framework
Bernacki, M.; Agnoli, A.; Bozzolo, N.; Loge, R.

MS638-2 **M-HS07**

Error estimation and modeling adaptation in computational mechanics
Chairperson: P. Ladeveze

10:30 3175 Error estimation and bounding in energy norm based on a displacement recovery technique
Nadal Soriano, E.; González Estrada, O.A.; Ródenas García, J.J.; Bordas, S.P.A.; Fuenmayor Fernández, F.J.

10:50 3176 A unified approach to build H(div)-reconstructed error estimators on the primal mesh
Becker, R.; Capatina, D.; Luce, R.

11:10 3177 Equilibrated-flux-based a posteriori error estimates for DGMs: algebraic error, nonmatching grids, and simple evaluation
Dolejší, V.; Ern, A.; Šebestová, I.; Vohralík, M.

11:30 3178 A global element equilibration technique to recover statically admissible stress fields in finite element computations
Gosselet, P.; Rey, V.; Rey, C.

11:50 3179 Error estimation and error bounding in quantities of interest based on equilibrated recovered displacement fields
Nadal Soriano, E.; González Estrada, O.A.; Ródenas García, J.J.; Bordas, S.P.A.; Fuenmayor Fernández, F.J.

MS642-2 **J-SR64**

Computational and experimental methods for mechanical analyses of microbial biofilms
Chairperson: A.E. Ehret

10:30 3180 Volume growth modelling of biofilms in continuum mechanics
Bolea Albero, A.; Ehret, A.E.; Böl, M.

10:50 3181 High-speed visualization of the removal of a model biofilm by acoustic streaming and acoustic cavitation
Versluis, M.; Verhaagen, B.; Boutsioukis, C.; van der Sluis, L.

11:10 3182 Applied online image acquisition techniques for surface visualization of biofilms
Hellriegel, J.; Krull, R.

11:30 3183 Chraracterization of pathogenic biofilms in urinary tract catheters
Dohnt, K.; Berger, A.; Tielen, P.; Krull, R.

Wednesday, September 12, 2012, 10:30 - 12:30

MS648-2 **M-HS41**

Computational micromechanics of wood and cellulose-fibre based materials
Chairperson: E.K. Gamstedt

10:30 3184 Elastic properties of hardwood at different length scales predicted by means of a micromechanical model
Bader, T.K.; Wikete, C.; de Borst, K.

10:50 3185 Effect of scaling on the bulk mechanical properties of hierarchical structures: experimental characterization and numerical modelling
Srinivasa, P.N.; Kulachenko, A.

11:10 3186 Mechanical properties of Scots Pine (Pinus sylvestris L.) cell walls after fungal degradation: multiscale micromechanical modeling and experimental valication
Wagner, L.; Bader, T.K.; de Borst, K.

11:30 3187 Approaches to biomimetic conservation of archaeological wood
Christensen, M.; Kutzke, H.; Hansen, F.K.

11:50 3188 Prediction of elastic properties of wood cellulose nanofibrils from ultrastructure using a self-consistent Mori-Tanaka model
Josefsson, G.S.; Gamstedt, E.K.; Steinar Tanem, B.; Li, Y.; Vullum, P.E.

12:10 3189 Modeling of global and local buckling of corrugated board panels loaded in edgewise compression
Åslund, P.; Hägglund, R.; Carlsson, L.; Isaksson, P.

MS651-2 **J-HS12**

Optimization and control methodologies for aerodynamic design
Chairpersons: M. Widhalm; N.R. Gauger

10:30 3190 Adjoint-based methods for the aero-acoustic design of aerospace systems
Alonso, J.J.; Palacios, F.; Economon, T.D.

10:50 3191 A hybrid adjoint approach to hydrodynamic shape optimisation of ship hulls
Rung, T.; Stück, A.; Kröger, J.

11:10 3192 Optimisation of the active flow control of a NACA4412 airfoil by using a continuous adjoint approach
Carnarius, A.; Thiele, F.; Oezkaya, E.; Nemili, A.; Gauger, N.R.

11:30 3193 Optimal separation control on airfoils using discrete adjoint approach
Nemili, A.; Özkaya, E.; Gauger, N.R.; Carnarius, A.; Thiele, F.

11:50 3194 Sensitivity analysis of statistical quantities in unsteady aerodynamics
Wang, Q.

12:10 1526 Differentiable shape optimization: summary of a lecture at the Von Karman Institute, May 2012.
Pironneau, O.

MS656-1 **M-HS34**

Inverse problems
Chairperson: B.B. Guzina

10:30 3195 Time reversal with partial information for wave refocusing and scatterer identification **(Keynote Lecture)**
Givoli, D.; Turkel, E.

11:00 3196 Full-waveform inversion in time-domain for geophysical applications **(Keynote Lecture)**
Gaudio, L.; Micheletti, S.; Perotto, S.; Rizzuti, G.

11:30 3197 Inversion of seismic reflection data through focusing
Mulder, W.A.

11:50 3198 cancelled Optimization of singular PDEs, with application in MEMS design
Clason, C.; Kaltenbacher, B.

12:10 3199 Regularization of noisy Cauchy problem solution approximated by energy-like method
Rischette, R.; Baranger, T.; Andrieux, S.

MS661-6 **J-SR20**

Numerical methods and applications of multi-physics in biomechanical modeling
Chairperson: C. Michler

10:30 3200 Immersed volume method for fluid-structure interaction with anisotropic mesh adaptation
Hachem, E.; Feghali, S.; Coupez, T.

10:50 3201 A computational method coupling 3D and reduce-D models based on Neumann boundary conditions for biomechanical problems
Ismail, M.; Gravemeier, V.; Comerford, A.; Wall, W.A.

11:10 3202 Three-dimensional fluid-structure interaction model of blood flow incorporating viscoelastic wall properties
Raghu, R.; Xiao, N.; Taylor, C.A.; Figueroa, C.A.

11:30 3203 Kinematical splitting algorithm for fluid-structure interaction with application to hemodynamics
Lukacova-Medvidova, M.; Rusnakova, G.

11:50 3204 One-dimensional modeling of blood flow in viscoelastic arteries
Olufsen, M.; Haider, M.; Battista, C.; Steele, B.

12:10 1521 cancelled Branched models complex flow: a modular multiscale coupling that handles backflow
Vignon-Clementel, I.E.; Esmaily Moghadam, M.; Figliola, R.; Marsden, A.L.

MS664-3 **M-HS21**

Recent advances in boundary element and meshless methods
Chairperson: J. Sladek

10:30 3205 The variationally hybrid and the expedite boundary element methods applied to general problems involving domain actions
Dumont, N.A.; Aguilar, C.A.

10:50 3206 Level set-based topology optimization using an immersed boundary element method
Yamasaki, S.; Yamada, T.; Matsumoto, T.

11:10 3207 A comparison between three numerical models to analyse the underwater acoustics “step” problem
Santiago, J.A.F.; Costa, E.G.A.; Godinho, L.M.C.; Pereira, A.S.C.; Wrobel, L.C.

11:30 3208 BEM implementation of an interface damage and plasticity model and its application to DCB test
Panagiotopoulos, C.G.; Mantič, V.; Roubiček, T.

11:50 3209 BIEM analysis of the dynamic interaction between a penny-shaped crack and a thin interlayer in 3-D piecewise-homogeneous elastic solid
Mykhas‘kiv, V.; Stankevych, V.; Zhbadynskyi, I.; Zhang, C.

12:10 3210 Transient thermoelastic crack analysis of a functionally graded layer coated on a homogeneous substrate by a BEM
Ekhlakov, A.V.; Khay, O.M.; Zhang, C.

TS012-6 **J-HS11**

Computational fluid mechanics
Chairperson: S. Pirker

10:30 3211 Developing magnetogasdynamic flow and heat transfer in a microchannel
Weng, H.C.

10:50 3212 Preliminary assessment of a new algorithm for the MHD equations at all Mach number regimes
Xisto, C.; Páscoa, J.C.; Oliveira, P.J.

11:10 3213 Numerical investigation on efficiency increase in high altitude propulsion systems using plasma actuators
Abdollahzadehsangroudi, M.; Páscoa, J.C.; Oliveira, P.J.

11:30 3214 Ferrohydrodynamic flow simulation in porous media using the Lattice Boltzmann method
Sousa, A.; Hadavand, M.

Wednesday, September 12, 2012, 10:30 - 12:30

TS023-1 **M-HS48**

Computational nonlinear dynamics
Chairperson: S. Hartmann

10:30 3215 High-order algorithm for non-linear dynamics
Laier, J.E.

10:50 3216 A hybrid time-frequency procedure for the solution of nonlinear and frequency-dependent problems
Correa, F.N.; Jacob, B.P.

11:10 3217 Atlas algorithms, event handling, and mesh adaptation in a new platform for parameter continuation and bifurcation analysis in dynamical systems
Dankowicz, H.; Schilder, F.

11:30 3218 Strong and weak points of recent indicators of chaos and order used in dynamical systems studies
Deleanu, D.N.

11:50 3219 Nonlinear techniques for wide-bandwidth resonant energy harvesting
Kacem, N.; Foltete, E.; Baguet, S.; Dufour, R.; Hentz, S.

TS025-6 **M-HS16**

Computational solid and structural mechanics
Chairperson: D. Kuhl

10:30 3220 Low-order continuum (shell) elements at finite strains - their limits of perfectibility and applications
Winkler, R.; Traxl, R.

10:50 3221 One-dimensional finite element analysis of frame/shear wall structures of variable cross section and loading
Savassi, W.; Corrêa, M.R.S.

11:10 cancelled 3222 An efficient 4-node shear-flexible free rotation beam element for finite element modeling and analysis of solid-to-beam connections
Meghlat, E.; Oudjene, M.; Ait-Aidet, H.

11:30 3223 Analysis of column web panel in shear for asymmetrical steel joints using finite elements models
Loureiro, A.; Bayo, E.; Lopez, M.

11:50 3224 Adaptive numerical simulation of contact problems - resolving local effects at the contact boundary in space and time
Krause, R.; Veeser, A.; Walloth, M.

12:10 3225 On mortar methods and NURBS discretization for contact formulations
Cichosz, T.; Matzen, M.; Hartmann, S.; Bischoff, M.; Ramm, E.

TS036-1 **J-UG22**

Multi-phase flows
Chairperson: C. Govina

10:30 3226 Multi-objective optimization of cyclone geometry based on CFD simulations using the desirability function and genetic algorithms
Elsayed, K.; Lacor, C.

10:50 3227 Improving immersed boundary methods for DNS of gas-solid flows
Zastawny, M.; Pennefather, J.; van Wachem, B.

11:10 3228 Break-up of aggregates in turbulent channel flow
Pecile, E.; Marchioli, C.; Soldati, A.; Biferale, L.; Toschi, F.

11:30 3229 DNS of compressible turbulent droplet-laden channel flow
Bukhvostova, A.; Kuerten, H.; Geurts, B.J.

11:50 3230 A kinetically based algorithm for porous medium flow simulation on multicore computer systems
Trapeznikova, M.; Chetverushkin, B.; Churbanova, N.; Morozov, D.

12:10 3231 A stable XFEM formulation for multi-phase problems enforcing the accuracy of the fluxes
Zlotnik, S.; Diez, P.; Cottereau, R.

TS037-1 **M-HS46**

Multiple-scale physics and computation
Chairperson: B.J. Geurts

10:30 3232 A multiscale finite element method for transport modeling
Allaire, G.; Desroziers, S.; Enchéry, G.; Ouaki, F.

10:50 3233 Upscaling the transport equations in fibrous media
Yazdchi, K.; Luding, S.

11:10 3234 Numerical homogenization of transfer properties of heterogeneous media by immersed interface method
Do, D.P.; Hoxha, D.; Belayachi, N.

11:30 3235 Two models based on a two-scale homogenization approach for the mechanical behavior of the lungs' parenchyma
Cazeaux, P.; Grandmont, C.; Hesthaven, J.S.

TS040-2 **J-HS16**

Numerical algorithms for continuum approaches
Chairperson: K. Runesson

10:30 3236 Interaction between velocity potential and displacement in time-harmonic elasto-acoustic coupling: a numerical method with spectral elements and controllability approach
Mönkölä, S.

10:50 3237 Three dimensional modeling of fracture by fast multipole symmetric Galerkin boundary element method - application to multi-fractured media
Trinh, T.Q.; Mouhoubi, M.; Bonnet, M.; Chazallon, C.

11:10 3238 An efficient elasto-plastic parallel solver based on Total-FETI domain decomposition
Čermák, M.; Kozubek, T.

11:30 3239 Contact on arbitrary curved interfaces in the X-FEM
Ferte, G.; Massin, P.A.; Moës, N.

11:50 3240 Isogeometric analysis and Schwarz non-matching overlapping additive domain decomposition methods
Bercovier, M.; Soloveichik, I.

12:10 3241 Numerical modeling of the boundary value problems using the R-function method and atomic basis functions
Brajčić Kurbaša, N.; Gotovac, B.; Kozulić, V.

TS052-2 **J-SR63**

Unsteady flow computation
Chairperson: B. Chetverushkin

10:30 3242 Runge-Kutta methods for the incompressible Navier-Stokes equations
Sanderse, B.; Koren, B.

10:50 3243 Higher order implicit time integration schemes to solve incompressible Navier-Stokes on colocated grids using consistent unsteady Rhie-Chow
Kazemi-Kamyab, V.; van Zuijlen, A.H.; Bijl, H.

11:10 3244 Linear frequency domain predictions of dynamic derivatives for the DLR F12 wind tunnel model
Widhalm, M.; Hübner, A.R.; Thormann, R.

11:30 3245 Computation of the internal flow in reciprocating compressors using a self-developed 3D finite volume solver on moving meshes
Müllner, T.; Steinrück, H.

11:50 3246 Scale-adaptive simulation of multiple hot jets in cross flow at high Reynolds numbers
Duda, B.M.; Menter, F.R.; Hansen, T.; Deck, S.; Bézard, H.; Estève, M.

12:10 3247 Thermal recirculation of viscous incompressible flows in enclosures
Nicolás, A.; Bermúdez, B.

Wednesday, September 12, 2012, 10:30 - 12:30

TS060-1 **J-HS14**

Turbulences and vortices
Chairperson: J. Eberhardsteiner

10:30	3248	Numerical investigation of a cavitation phenomenon round a propulsor blade **Tesch, K.; Szantyr, J.A.; Flaszynski, P.**
10:50	3249	Conservative segregated solution method for turbulence model equations in compressible flows **Morsbach, C.; di Mare, F.**
11:10	3250	Numerical simulation of a flow inside an exhaust diffuser **Simak, J.; Pelant, J.**
11:30	3251	Numerical simulation of the turbulent flow in a rectangular channel with lateral slot **Goulart, J.; Souza, S.I.S.**
11:50	3252	Assessing convergence properties of RANS solvers with manufactured solutions **Eca, L.; Hoekstra, M.; Vaz, G.**

12:30 - 14:00

Lunch

Wednesday, September 12, 2012, 14:00 - 16:00

14:00 - 16:00

MS101-1 **M-HS28**

Computational biomechanics
Chairperson: D.H. Pahr

14:00 3400 A damage model to simulate nanoindentation tests of lamellar bone at multiple penetration depth **(Keynote Lecture)**
Lucchini, R.; Carnelli, D.; Gastaldi, D.; Shahgholi, M.; Contro, R.; Vena, P.

14:30 3401 A general concept for approximation of the trajectories of anisotropic elasticity for mammalian bone, demonstrated for the human mandible **(Keynote Lecture)**
Kober, C.; Müller, C.; Young, P.; Fritsch, A.; Hellmich, C.

15:00 3402 Optimal control for implant shape design
Lubkoll, L.; Schiela, A.; Weiser, M.

15:20 3403 Analysis of the polyethylene wear in anatomical shoulder prostheses
Quental, C.; Folgado, J.; Fernandes, P.R.; Monteiro, J.

15:40 3404 Simulating the periodontal ligament: modeling, efficient simulation, and validation
Favino, M.; Krause, R.

MS102-2 **M-HS07**

Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials
Chairperson: P. Wriggers

14:00 3405 Multiscale modelling of localization and damage through computational homogenization
Bosco, E.; Coenen, E.; Kouznetsova, V.; Geers, M.; Salvadori, A.

14:20 3406 Multiscale simulation of localization phenomena using XFEM²
Unger, J.F.

14:40 3407 A micro-meso numerical strategy for the simulation of the degradation of laminated composites
Daghia, F.; Ladeveze, P.

15:00 3408 A three dimensional homogenization technique for granular interfaces
Weidlich, R.; Temizer, I.; Wriggers, P.

15:20 3409 Modeling damages and fracture in fiber composites with ceramic polycrystalline matrices
Shavshukov, V.; Tashkinov, A.

MS104-2 **J-UG21**

Damage to fracture strategies, elasto-plastic crack initiation and propagation
Chairperson: V. Chiaruttini

14:00 3410 Anisotropic mesh adaptation dedicated to 2D/3D crack propagation
Hitti, K.; Bouchard, P.; Bernacki, M.

14:20 3411 Ductile fracture of shells: effective algorithms for non-smooth problems
Areias, P.; Rabczuk, T.

14:40 3412 Crack initiation and propagation, from homogeneous ductile media to laminated composite plates
Feld-Payet, S.; Besson, J.; Feyel, F.; Chiaruttini, V.

15:00 3413 The configurational forces concept – a new tool for damage resistant design
Kolednik, O.; Predan, J.; Zechner, J.; Fischer, D.F.

15:20 3414 On the coupling between shape variation and material dissipation for computation of the crack driving force
Guilie, J.; Le Tallec, P.

MS119-2 **M-HS42**

Innovative numerical methods for interface propagation in solids or coupled fluid solid problems
Chairpersons: A. Legay; A. Combescure

14:00 3415 Modeling frictional contact conditions with the penalty method in the extended finite element framework
Biotteau, E.; Ponthot, J.

14:20 3416 The interphase elasto-plastic damaging model applied to masonry structures
Giambanco, G.; Fileccia Scimemi, G.; Spada, A.

14:40 3417 Numerical modelling of interacting structures using a single mesh multivelocity strategy
Folzan, G.; Le Tallec, P.; Perlat, J.

15:00 3418 Modelization of immersed structures at arbitrary positions in an acoustic fluid using XFEM
Legay, A.

15:20 3419 Efficient methods to take into account the fluid lag in hydraulic fracturing simulations through a variational inequality formulation
Shen, Y.

MS122-1 **M-HS34**

Advances in smoothed finite element methods (SFEM)
Chairperson: M. Staat

14:00 3420 Application of an edge-based smoothed finite element method on geometrically non-linear plates of non-linear material
Frotscher, R.; Staat, M.

14:20 3421 Implementation of the edge-based smoothed extended finite element method
Nix, Y.; Frotscher, R.; Staat, M.

14:40 3422 An adaptive singular ES-FEM for fatigue crack propagation
Nguyen-Xuan, H.; Liu, G.R.; Bordas, S.P.A.; Rabczuk, T.

15:00 3423 Extended finite element method with edge-based strain smoothing (ESm-XFEM) for linear elastic crack growth
Chen, L.; Rabczuk, T.; Liu, G.; Bordas, S.P.A.

15:20 3424 Two imbricate finite element methods with smooth approximations
Cazes, F.; Meschke, G.

MS124-1 **J-HS16**

Developments on finite element and meshless formulations applied to metal forming problems
Chairperson: R. Valente

14:00 3425 Numerical analysis of multiroll leveling
Mathieu, N.; Dimitriou, R.; Dossah, T.; Potier-Ferry, M.; Zahrouni, H.

14:20 3426 Numerical simulation of reduced contact area metal forming processes: ALE formulation, data transfer and anisotropic remeshing - application to rolling and drawing
Fourment, L.; Gavoille, S.; Kumar, S.; Hachani, M.

14:40 3427 Free surface iterative algorithm based on a global resolution method for steady-state calculation of metal forming processes
Ripert, U.; Fourment, L.; Chenot, J.L.

15:00 cancelled 3428 Finite Pointset Method: meshfree numerical solver for chip formation processes in metal cutting
Kuhnert, J.

15:20 3429 Evaluation of ductile fracture in sheet metal forming using the ellipsoidal void model
Komori, K.

Wednesday, September 12, 2012, 14:00 - 16:00

MS129-7 **J-HS10**

Isogeometric analysis
Chairperson: V.M. Calo

14:00 3430 Isogeometric analysis using LR B-splines
Johannessen, K.A.; Kvamsdal, T.; Dokken, T.
14:20 3431 Visualisation of adaptive LR B-splines in isogeometric analysis
Stahl, A.; Johannessen, K.A.; Kvamsdal, T.
14:40 3432 Converting NURBS to NURPS geometry
Speleers, H.; Manni, C.; Pelosi, F.
15:00 3433 Improving the stability and locality properties of hierarchical splines
Giannelli, C.; Jüttler, B.; Speleers, H.
15:20 3434 On isogeometric formulations for finite deformation solids
Mathisen, K.M.; Okstad, K.M.; Kvamsdal, T.; Raknes, S.B.
15:40 3435 The interpolation of the director vector for isogeometric Reissner-Mindlin shell analysis
Klinkel, S.; Dornisch, W.

MS203-3 **M-HS31**

Higher-order methods for aerospace applications
Chairperson: F. Bassi

14:00 3436 Comparison of three viscous terms approximations for discontinuous Galerkin method by solving model convection-diffusion problems
Troshin, A.I.; Vlasenko, V.V.; Wolkov, A.V.
14:20 3437 Implicit high-order discontinuous Galerkin solution of turbulent flows with an explicit algebraic Reynolds stress model
Bassi, F.; Botti, L.A.; Colombo, A.; De Bartolo, C.
14:40 3438 An assessment of a fifth-order residual-based compact scheme for steady and unsteady compressible flows
Grimich, K.; Outtier, P.; Cinnella, P.; Lerat, A.
15:00 3439 High-order accurate p-multigrid discontinuous Galerkin solution for complex industrial applications
Ghidoni, A.; Rebay, S.; Pasquale, D.
15:20 3440 Geometric multigrid with implicit relaxation schemes for finite volume and discontinuous Galerkin discretizations of compressible flows
Leicht, T.; Langer, S.
15:40 3441 High-order discontinuous Galerkin solution of unsteady problems using modified extended backward differentiation formulae
Nigro, A.; Ghidoni, A.; Rebay, S.; Bassi, F.

MS305-3 **J-HS13**

High order finite element methods - analysis and computations
Chairperson: J. Gopalakrishnan

14:00 3442 Discontinuos Petrov-Galerkin method with optimal test functions
Demkowicz, L.F.; Gopalakrishnan, J.
14:20 3443 Discontinuous Petrov-Galerkin method for robust discretization of thin-walled structures
Niemi, A.H.; Collier, N.; Calo, V.M.
14:40 3444 Application of DPG to problems in fluid mechanics
Chan, J.; Demkowicz, L.F.; Roberts, N.V.
15:00 3445 A discontinuous Petrov-Galerkin method for seismic tomography problems
Bramwell, J.A.; Demkowicz, L.F.
15:20 3446 Camellia: a toolbox for a class of discontinuous Petrov-Galerkin methods using Trilinos
Roberts, N.V.; Ridzal, D.; Bochev, P.B.; Chan, J.; Demkowicz, L.F.

MS400-1 **J-SR64**

Numerical methods for surface PDEs
Chairperson: M. Olshanskii

14:00 3447 Tangential differential operators and finite elements for elasticity on thin curved domains
Hansbo, P.; Larson, M.G.
14:20 3448 Numerical methods for interface PDEs in two-phase incompressible flows
Olshanskii, M.; Reusken, A.
14:40 3449 An adaptive surface finite element method based on volume meshes
Demlow, A.; Olshanskii, M.
15:00 3450 Approximation of non-convex anisotropic energies via Willmore energy
Pozzi, P.; Reiter, P.
15:20 3451 An accurate numerical method for computation of two-phase flows with surfactants
Ganesan, S.; Hahn, A.; Tobiska, L.

MS404-2 **M-HS32**

Automation of computational modeling by advanced software tools and techniques
Chairperson: A. Logg

14:00 3452 Comparison of the numerical efficiency for variations of solid-shell finite elements using symbolic programming in explicit time integration
Schmied, C.; Mattern, S.; Schweizerhof, K.
14:20 3453 Framework for automated parallel finite element contact modeling with applications in fluid-structure interaction
Jansson, J.; Degirmenci, N.C.; Hoffman, J.
14:40 3454 Automation of stochastic finite element method
Melink, T.; Korelc, J.
15:00 3455 An automated computational framework for nonlinear elasticity with application to biological solid mechanics
Narayanan, H.
15:20 3456 Finite element methods in OP2 for heterogeneous architectures
Reguly, I.Z.; Giles, M.; Mudalige, G.; Bertolli, C.
15:40 3457 Toward the automation of a non linear solver coupling Harmonic Balance and Asymptotic Numerical Methods (HBANM)
Sadoulet-Reboul, E.; Lejeune, A.

MS600-3 **M-HS47**

Multiscale and multiphysics modelling in bone mechanobiology (3MBM)
Chairperson: B.V. Rietbergen

14:00 3458 Proximal human femur fracture assessment using isotropic and orthotropic materials: a comparative FE-study using a quasi brittle damage models
Bettamer, A.; Hambli, R.; Allaoui, S.; Barkaoui, A.
14:20 cancelled 3459 Application of 2D finite element model to investigate the proximal femur fracture using DXA images and quasi-brittle damage law
El Hraiech, A.; Hambli, R.; Lespessailles, E.; Benhamou, C.
14:20 NEW 2747 A three-scale finite element investigation into the effects of mechanics of cortical and trabecular bone
Vaughan, T.J.; McCarthy, C.T.; McNamara, L.M.
14:40 3460 Interstitial fluid flow within bone canaliculi: numerical assessment of the influence of physical and material parameters
Sansalone, V.; Kaiser, J.; Naili, S.; Lemaire, T.
15:00 3461 Bone-electricity and calcium permselectivity in the adaptation of bone tissue
Lemaire, T.; Naili, S.

Wednesday, September 12, 2012, 14:00 - 16:00

MS607-1 **J-HS18**

Robustness analysis
Chairpersons: A. Naess

14:00 3462 Robustness evaluations for CAE-based virtual prototyping of automotive applications
Will, J.

14:20 3463 Probability-based robust design optimization of a centrifugal compressor concerning fluid-structure interaction
Roos, D.; Einzinger, J.

14:40 3464 Probabilistic evaluation of the structural robustness of bridges
Miao, F.; Ghosn, M.

15:00 3465 On the computation of solution spaces for robust design and sensitivity analysis
Graff, L.S.; Zimmermann, M.

15:20 3466 Robust design optimization based on reliability analysis
Bucher, C.

MS618-3 **J-SR63**

Computational structural stability
Chairperson: H.A. Mang

14:00 3467 Influence of the effects of tension stiffening and tension softening on the failure mode of a RC hyperbolic cooling tower
Jia, X.; Mang, H.A.

14:20 3468 Interaction of initial imperfections and slotted connections in stability analysis of thin-walled structures
Rzeszut, K.; Garstecki, A.

14:40 3469 Buckling in plate girder webs
Shanmugam, N.E.

15:00 3470 Influence of initial imperfections on stability of steel I girders for variable rib configuration
Chybiński, M.; Garstecki, A.

15:20 3471 Adaptive continuation methods for material softening
Pohl, T.; Bischoff, M.

MS622-7 **M-Elise Richter**

Multiscale and multiphysics modelling for complex materials
Chairperson: M. Geers

14:00 3472 Multiscale modeling of carbon nanotube turfs
Radhakrishnan, H.; Mesarovic, S.D.; Qui, A.; Bahr, D.F.

14:20 3473 Friction welding of the bars made of aluminium and titanium alloys
Lacki, P.; Wojsyk, K.; Kudła, K.; Śliwa, R.E.

14:40 3474 Effects of grain boundary heterogeneities on creep fracture of ultra-high temperature ceramics
Yu, C.; Chen, C.D.; Huang, C.; Gao, Y.; Hsueh, C.

15:00 3475 Viscous regularization for Cam-Clay plasticity: how to handle subcritical softening
Conti, R.; DeSimone, A.; Tamagnini, C.

MS630-2 **J-HS15**

Advances in computational modelling of recrystallization and grain growth
Chairperson: C.E. Krill III

14:00 3476 Simulation of grain growth with consideration of the mobility and energy of the triple lines
Barrales-Mora, L.; Gottstein, G.; Shvindlerman, L.S.

14:20 3477 Parallel potts model simulation of nanocrystalline grain growth
Schäfer, S.; Zöllner, D.

14:40 3478 Comparison between different simplified grain growth models using “full field” modelling method results
Cruz Fabiano, A.L.; Bernacki, M.; Loge, R.

15:00 3479 EBSD supported 3D simulations of recrystallization on a deformed microstructure with the finite element and the phase-field method
Vondrous, A.; Bienger, P.; Schendel, S.; Selzer, M.; Nestler, B.; Helm, D.; Mönig, R.

15:20 3480 Simulation of DDRX in particle-containing Cu using a 3D cellular automaton
Hallberg, H.; Svendsen, B.; Ristinmaa, M.; Kayser, T.

15:40 3481 Simulation of static recrystallization kinetics by coupling crystal plasticity FEM with a multiphase field model
Laschet, G.; Henke, T.; Bambach, M.; Apel, M.; Böttger, B.; Roters, F.; Eisenlohr, P.

MS638-3 **J-SR10**

Error estimation and modeling adaptation in computational mechanics
Chairperson: C. Carstensen

14:00 3482 Two approaches for goal oriented a posteriori error estimation in time dependent contact problems
Rademacher, A.

14:20 3483 Goal oriented error for stochastic plastic finite element problem
Florentin, E.; Blaysat, B.

14:40 3484 Computable bounds of linear functional outputs in linear visco-elastodynamics
Verdugo, F.; Diez, P.

15:00 3485 Strict upper bounds for local quantity of interest in elasto-plasticity
Blaysat, B.; Florentin, E.; Ladeveze, P.

15:20 3486 On guaranteed a posteriori error estimates for numerical solutions of nonlinear parabolic problems
Nakao, M.T.; Kimura, T.; Kinoshita, T.

15:40 3487 Some functional a posteriori error estimates for problems in nonlinear mechanics
Valdman, J.

MS640-1 **J-HS14**

Partitioned simulation of coupled problems
Chairpersons: J. Degroote; R. Wüchner

14:00 3488 Fluid-structure interaction in turbulent flows and the influence of LES subgrid-scale models
Münsch, M.; Delgado, A.; Breuer, M.

14:20 3489 Fluid-structure interaction in turbulent flows: LES predictions and PIV measurements
De Nayer, G.; Breuer, M.; Kalmbach, A.

14:40 3490 Efficient strong coupling algorithms for fluid-structure interaction using space-mapping
Scholcz, T.P.; van Zuijlen, A.H.; Bijl, H.

15:00 3491 Efficient tools and techniques for high-performance partitioned analysis of complex coupled systems
Rossi, R.; Ryzhakov, P.; Cotela, J.; Dadvand, P.; Idelsohn, S.R.; Oñate, E.

15:20 3492 Free-surface flow problems: coupling with the kinematic condition and NURBS-based surface representation
Behr, M.; Elgeti, S.; Pauli, L.; Sauerland, H.

15:40 3493 Parallel analysis of magnetic-structural coupled vibration of MRI model
Sugimoto, S.; Fujii, H.; Kataoka, S.; Magron, V.; Yoshimura, S.

Wednesday, September 12, 2012, 14:00 - 16:00

MS656-2 **J-SR62**

Inverse problems
Chairperson: M. Bonnet

14:00 3494 External thermal hydraulic model for leakage assessment inside soil dikes through temperature measurements
Kerzalé, S.; Maillet, M.; Girard, A.

14:20 3495 In situ measurements of anisotropic heat conductivity
Adamczyk, W.P.; Kruczek, T.; Bialecki, R.A.

14:40 3496 Inverse analysis for estimating thermal property from full field measurement
Maekawa, M.; Kubo, S.; Ioka, S.

15:00 3497 Application of the inverse analysis for retrieval of the heat transfer coefficient for free surface water jet impingement
Ryfa, A.; Bialecki, R.A.

15:20 3498 Inverse problem of fluid temperature estimation inside a flat mini-channel starting from temperature measurements over its external walls
Rouizi, Y.; Maillet, D.; Jannot, Y.; Perry, I.

15:40 3499 Identification of internal boundary position in two-layers domain on the basis of external surface temperature distribution
Freus, S.; Freus, K.; Majchrzak, E.; Mochnacki, B.

MS658-1 **M-HS48**

Computational modelling of tire, pavement and interaction phenomena
Chairperson: R. Blab

14:00 3500 A coupled flow-deformation model for permeable pavements
Oeser, M.

14:20 3501 Deformations in asphalt pavement in dependency on truck tires
Zopf, C.; Kaliske, M.; Garcia, M.A.; Wollny, I.

14:40 3502 Mechanical analysis of pavement material using time-dependent plasticity and isotropic damage models
Gomes, I.F.; Costa, L.M.; Pontes, I.D.D.S.

15:00 3503 Including the uncertainty of material properties in the structural modeling of flexible pavement
Castillo, D.; Caro, S.

15:20 3504 Numerical simulation tool for slab and block pavements validated by means of large-scale accelerated pavement tests
Füssl, J.; Kluger-Eigl, W.; Blab, R.

15:40 3505 Experimental testing and investigation of the stress-dependent material behaviour of asphalt via the triaxial test
Zeissler, A.; Wellner, F.; Oeser, M.

MS664-4 **J-SR20**

Recent advances in boundary element and meshless methods
Chairperson: A. Sáez

14:00 3506 Local integral equation method for prediction of effective magnetoelectroelastic moduli in functionally graded composites **(Keynote Lecture)**
Sladek, J.; Sladek, V.; Zhang, C.

14:30 3507 A meshless LBIE method for solving strain gradient elastic problems **(Keynote Lecture)**
Sellountos, E.; Tsinopoulos, S.; Beskos, D.; Polyzos, D.

15:00 3508 Decomposition of thin plate bending equations and numerical solutions by local integral equation methods
Sladek, V.; Sladek, J.; Sator, L.

15:20 3509 Transport of pollutant solved by radial basis boundary element method
Kovarik, K.; Muzik, J.

15:40 3510 An implicit residual-type a posteriori error estimator for meshfree RKPM approximations
Rüter, M.; Chen, J.S.

TS007-1 **M-HS46**

Computational biomechanics
Chairperson: F. Auricchio

14:00 3511 Immersed boundary method for pulsatile flow in cerebral aneurysms
Mikhal, J.; Geurts, B.J.

14:20 3512 Idealized Abdominal Aortic Aneurysm (AAA) geometry as predictor of hemodynamics stresses
Soudah, E.; Villalta, G.; Vilalta Alonso, J.; Bordone, M.; Nieto, F.; Pérez, M.Á.; Vaquero, C.

14:40 3513 Numerical simulation of blood flows in the aorta with aortic valves by virtual flux method
Fukui, T.; Morinishi, K.

15:00 3514 Computational fluid dynamic analysis of the regurgitant flow in a bileaflet mechanical heart valve
Nallamothu, R.K.; Rafiroiu, D.; Lawford, P.; Hose, R.

15:20 3515 Swirling flows and vortex dynamics in thoracic aorta with torsion
Suito, H.; Ueda, T.; Sze, D.

TS012-7 **M-HS21**

Computational fluid mechanics
Chairperson: T. Coupez

14:00 3516 Special finite-difference methods for extremely anisotropic diffusion
van Es, B.; Koren, B.; de Blank, H.

14:20 3517 A multiple-level-set approach for the simulation of flows with moving immersed boundaries
Günther, C.; Meinke, M.; Schröder, W.

14:40 3518 Modified level set transport equation and analysis of its numerical solution
Sabel'nikov, V.; Ovsyannikov, A.; Gorokhovski, M.

15:00 3519 Numerical analysis of moving boundary problems using an area-preserving scheme
Tagami, D.

15:20 3520 Implementation of the Spalart-Allmaras turbulence model in the two-dimensional vortex-in-cell method
Hejlesen, M.M.; Rasmussen, J.T.; Larsen, A.; Walther, J.H.

TS017-1 **J-UG22**

Computational materials science
Chairperson: M. Todt

14:00 3521 Brittle-ductile fracture in perforated flat bars: the Kirsch stress-concentration problem
Beizaee, S.; Willam, K.; Xotta, G.

14:20 3522 Geometrical and thermal characterization of silica aerogel using classical molecular dynamics
Yeo, J.J.; Ng, T.Y.; Liu, Z.S.

14:40 3523 Nanoparticle synthesis simulation at electrical explosion of metal wires
Zolnikov, K.P.; Abdrashitov, A.; Kryzhevich, D.S.; Psakhie, S.

15:00 3524 Simulation of the plastic deformation process in a copper crystallite under nanoindentation
Kryzhevich, D.S.; Zolnikov, K.P.

15:20 cancelled 3525 Molecular dynamics studies of plastic behavior of nanocrystalline aluminum under indentation
Wu, C.; Wang, Y.

15:40 3526 Constitutive modeling of nanocrystalline metals based on competing grain boundary and grain interior deformation mechanisms
Gurses, E.; El Sayed, T.

Wednesday, September 12, 2012, 14:00 - 16:00

TS023-2 **J-HS12**

Computational nonlinear dynamics
Chairperson: M. Kaltenbacher

14:00 3527 Development of a wear model for the wheel profile optimization on railway vehicles running on the Italian net
Meli, E.; Ignesti, M.; Marini, L.; Rindi, A.; Toni, P.

14:20 3528 Wear prediction in the railway field: development of a model for the study of the wheel and rail profile evolution
Ignesti, M.; Meli, E.; Marini, L.; Rindi, A.

14:40 3529 Numerical simulation of a HIL fullscale roller-rig model to reproduce degraded adhesion conditions in railway applications
Conti, R.; Allotta, B.; Meli, E.; Malvezzi, M.; Ridolfi, A.; Pugi, L.

15:00 3530 A dynamic analysis of a railway vehicle with consideration of 2-point contact between the wheel-rail
Jeong, G.B.; Park, T.W.

15:20 3531 Analysis of nonlinear dynamic behavior of micro circular plate actuator using hybrid numerical method
Liu, C.

TS025-7 **J-HS11**

Computational solid and structural mechanics
Chairperson: E. Artioli

14:00 3532 A thermomechanically consistent material model with damage for applications in simultaneous hot/cold forming processes
Bröcker, C.; Matzenmiller, A.

14:20 3533 A novel solid-beam finite element for the simulation of nitinol stents
Frischkorn, J.; Reese, S.

14:40 3534 Implicit integration of a model for martensite reorientation in shape memory alloys
Zaki, W.

15:00 3535 Stiff honeycombs with structural hierarchy
Ajdari, A.; Haghpanah Jahromi, B.; Vaziri, A.

15:20 3536 A statistical representation of failure for cellular materials
Karakoc, A.; Freund, J.T.

15:40 3537 A singular solution for a general plane-strain pressure-dependent yield criterion
Alexandrov, S.

TS028-1 **M-HS50**

Design optimization techniques that require extensive CFD and coupling/linkage methods
Chairperson: R. Willinger

14:00 3538 The use of neural networks with selective activation neurons for the three-dimensional design optimization of multistage turbomachinery
Cravero, C.; Macelloni, P.; Briasco, G.

14:20 cancelled 3539 Optimization of centrifugal compressors vaned diffusers based on metamodel-assisted genetic algorithms
Olivero, M.; Pasquale, D.; Ghidoni, A.; Rebay, S.

14:40 3540 Towards efficient multdiscplinary optimization for turbine endwall contouring
Barr, B.; Venugopal, P.; Shankaran, S.

15:00 3541 Numerical optimization of rectangular micro-channel heat sinks
Tang, H.; Yang, Y.; Hsu, Y.

TS036-2 **M-HS41**

Multi-phase flows
Chairperson: K. Okita

14:00 3542 A weakly compressible formulation for modelling violent liquid-gas sloshing
Heyns, J.A.; Oxtoby, O.F.; Malan, A.G.

14:20 3543 Numerical study of aerosol deposition in a simplified human mouth throat model
Agnihotri, V.; Ghorbaniasl, G.; Verbanck, S.; Lacor, C.

14:40 3544 Numerical simulation of compressible multi-phase flows using discontinuous Galerkin methods with non-smooth enrichments
Müller, B.; Kummer, F.; Oberlack, M.

15:00 3545 An extended discontinuous Galerkin method for multiphase flows
Kummer, F.; Klein, B.; Oberlack, M.

15:20 3546 A high order conservative method for the simulation of compressible multiphase flows
Perrier, V.; Franquet, E.

15:20 4439 Coupled CFD-DEM simulation of particle-laden flows in slot die coating system with presence of free surfaces
NEW **Akbarzadeh, V.; Hrymak, A.N.**

TS037-2 **J-SR53**

Multiple-scale physics and computation
Chairperson: H. Böhm

14:00 3547 Characterization of macroscopic mechanical behavior of concrete with mesoscopic scale finite element analysis
Pituba, J.J.C.; Neto, E.A.S.

14:20 3548 FE^2 for liquid-phase sintering with seamless transition from macroscopic compressibility to incompressibility
Öhman, M.; Runesson, K.; Larsson, F.

14:40 3549 FDTD band structure calculation of three-dimensional local resonance phononic crystal with a filter diagonalization-based postprocessing method
Su, X.; Zhang, C.

15:00 3549a Modeling of grain shape impact on the mechanical behavior of polycrystals
Abdul-Latif, A.

TS060-2 **M-HS23**

Turbulences and vortices
Chairperson: J. Goulart

14:00 3550 A new cell-centered ALE method based on (adaptive) Riemann solver
Liu, Y.; Mao, D.; Shen, W.

14:20 3551 3D vortex structures dynamics simulation using vortex fragmentons
Marchevsky, I.K.; Shcheglov, G.A.

14:40 3552 Vortex element method for 2D flow simulation with tangent velocity components on airfoil surface
Moreva, V.S.; Marchevsky, I.K.

15:00 3553 On application of vortex element method for aeroelastic airfoil dynamics simulation
Shcheglov, G.A; Ermakov, A.V.

15:20 3554 Optimization of a turbulence model by using data assimilation
Kato, H.; Obayashi, S.

15:40 3555 Modelling of the bypass-transition in the linear turbine blade cascade
Straka, P.; Příhoda, J.

16:00 - 16:30

Coffee Break

Wednesday, September 12, 2012, 16:30 - 18:30

16:30 - 18:30

MS101-2 **M-HS28**

Computational biomechanics
Chairperson: B. Markert

16:30 3700 Structure and elasticity of hydrating collagen: a multiscale continuum approach
Morin, C.; Henits, P.; Hellmich, C.

16:50 3701 Application of the adaptive FEM to computational biomechanics
Rachowicz, W.; Zdunek, A.; Eriksson, T.

17:10 3702 The coupled passive-active mechanical response of a slightly compressible artery wall investigated by p-FEMs
Priel, E.; Yosibash, Z.

17:30 3703 A method for incorporating residual stresses into patient-specific finite element simulations of arteries with an example on AAAs
Pierce, D.M.; Fastl, T.E.; Weisbecker, H.; Rodriguez-Vila, B.; Gómez, E.J.; Holzapfel, G.A.

17:50 3704 Numerical stability enhancement of modeling hyperelastic materials
Duong, T.M.; Nguyen, H.N.; Staat, M.

18:10 3705 An orthotropic, viscoelastic model for the cornea and the effect of implanting an intrastromal ring segment
Kling, S.; del Coz Diaz, J.J.; Suárez, J.L.; Marcos, S.

MS102-3 **M-HS07**

Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials
Chairperson: C. Oskay

16:30 3706 Computational multiscale modeling of thermomechanical contact
Temizer, I.

16:50 3707 Atomistic to continuum modeling of materials
Davydov, D.; Javili, A.; Steinmann, P.

17:10 3708 Abaqus toolbox for multiscale finite element analysis
Tchalla, A.; Makradi, A.; Zahrouni, H.; Belouettar, S.

17:30 3709 Multiscale modeling of magnetoactive composite materials
Kästner, M.; Spieler, C.; Goldmann, J.; Obst, M.; Brummund, J.; Ulbricht, V.

17:50 3710 On some composite yield criteria based on the homogenization method
Muravleva, L.V.

MS104-3 **J-UG21**

Damage to fracture strategies, elasto-plastic crack initiation and propagation
Chairperson: H. Minnebo

16:30 3711 A discrete dislocation analysis of hydrogen-assisted mode I fracture
Irani, N.; Remmers, J.; Deshpande, V.

16:50 3712 Phase-field simulations of crack propagation in brittle polycrystal
Oshima, K.; Takaki, T.; Muramatsu, M.

17:10 3713 Modelling of reinforced concrete beams under mixed shear-tension failure with different continuous FE approaches at macro- and meso-level
Skarżyński, L.; Marzec, I.; Tejchman, J.

17:30 3714 Analysis of ductile damage mechanisms for different voids/particles configurations and under various loading conditions
Roux, E.; Bernacki, M.; Bouchard, P.

17:50 3715 Non-associative improved Lemaitre's damage model
Malcher, L.; Mamiya, E.N.

MS109 **J-SR53**

Constitutive modeling of laminated CRFP composites within the framework of structural analysis
Chairpersons: P.P. Camanho; H.E. Pettermann

16:30 3716 Modeling progressive damage and failure of laminated composites using mechanism dependent mesh objective models
Heinrich, C.; Davidson, P.; Waas, A.

16:50 3717 Elasto-plasto-damage modeling of laminated composites
Pettermann, H.E.; Gager, J.; Flatscher, T.

17:10 3718 Smeared crack model for the prediction of failure in polymer composites
Camanho, P.P.; Bessa, M.; Catalanotti, G.

17:30 3719 Multi-scale analysis of fibre reinforced structures
Kurnatowski, B.; Chatiri, M.; Matzenmiller, A.

17:50 3720 Isogeometric analysis of the mechanical behaviour of laminated composites
Hosseini, S.; Verhoosel, C.V.; Remmers, J.; de Borst, R.

18:10 3721 Verification of a mesomechanically motivated constitutive law for FRP
Stier, B.; Reese, S.

MS122-2 **M-HS34**

Advances in smoothed finite element methods (SFEM)
Chairperson: M. Staat

16:30 3722 A primal-dual shakedown analysis of 3D structures using the face-based smoothed finite element method
Tran, N.T.; Staat, M.

16:50 3723 An improved immersed smoothed finite element method using high-order hybridizable discontinuous Galerkin method (IS-FEM-HDG) for fluid structure interaction problems
Zhang, Z.; Khoo, B.C.; Liu, G.

MS124-2 **J-HS16**

Developments on finite element and meshless formulations applied to metal forming problems
Chairperson: E. Cueto

16:30 3724 Adaptive smoothed FEM for forming simulations
van den Boogaard, A.H.; Quak, W.

16:50 3725 Numerical and experimental study of the bulge test of sandwich shells with metal foam cores
Mata, H.; Natal Jorge, R.M.; Santos, A.D.; Parente, M.P.L.; Valente, R.; Fernandes, A.A.

17:10 3726 On the stress integration algorithm for homogeneous yield function-based anisotropic hardening model
Lee, M.; Lee, J.; Barlat, F.; Kim, J.H.

17:30 3727 Integrated product and process development in sheet metal forming applying the methods of computer aided engineering and finite element modeling
Tisza, M.

Wednesday, September 12, 2012, 16:30 - 18:30

MS129-8 **J-HS10**

Isogeometric analysis
Chairperson: M. Bischoff

16:30 3728 Abaqus user element implementation of NURBS based isogeometric analysis
Duval, A.; Maurin, F.; Elguedj, T.

16:50 3729 NURBS enriched contact elements for contact and adhesion between deformable bodies
Corbett, C.J.; Sauer, R.A.

17:10 3730 Effective adaptation of isogeometric analsyis in the marine and offshore industry
Støle-Hentschel, S.; Skeie, G.

17:30 3731 Finite element and B-spline methods for one-dimensional non-local elasticity
Malagù, M.; Benvenuti, E.; Simone, A.

MS203-4 **M-HS31**

Higher-order methods for aerospace applications
Chairperson: T. Leicht

16:30 3732 A high order incompressible discontinuous Galerkin – Fourier solver with sliding meshes for turbulent flows
Ferrer, E.; Willden, R.

16:50 3733 High-order curvilinear mesh optimisation for high-aspect ratio meshes used for Reynolds-Averaged Navier-Stokes equations
Gorissen, B.; Remacle, J.

17:10 3734 Hybrid grid generation in anisotropic adaptation applied for high Reynolds number turbulent flows
Majewski, J.; Szałtys, P.

17:30 3735 Mesh deformation through elastic analogy for boundary conforming adaptive refinement
Gepner, S.W.; Rokicki, J.

MS305-4 **J-HS13**

High order finite element methods - analysis and computations
Chairperson: R. Heuer

16:30 3736 An application of hp-adaptivity to the inverse problem of electrical impedance tomography
Ledger, P.D.

16:50 3737 An hp-adaptive level set method for simulating two-component flows in optofluidic devices
Ronnas, S.; Heuveline, V.

17:10 3738 Higher order BEM-based FEM on polygonal meshes
Rjasanow, S.; Weißer, S.

17:30 3739 Anisotropic graded meshes and quasi-optimal rates of convergence for the FEM on polyhedral domains in 3D
Bacuta, C.; Nistor, V.; Zikatanov, L.

17:50 3740 Boundary concentrated finite elements for optimal boundary control problems of elliptic PDEs
Beuchler, S.; Hofer, K.; Pechstein, C.; Wachsmuth, D.; Wurst, J.E.

MS400-2 **J-SR64**

Numerical methods for surface PDEs
Chairperson: A. Reusken

16:30 3741 A volume-of-fluid based method for the simulation of fluid particles influenced by surface active agents
Ali, A.; Bothe, D.

16:50 3742 Three dimensional simulation of viscous effects in biological membranes using a finite element/level set technique
Ausas, R.F.; Buscaglia, G.C.

17:10 3743 Simulation of interfacial convection-diffusion equations by discontinuous Galerkin methods and a new conservative formulation
Kallendorf, C.; Cheviakov, A.F.; Oberlack, M.; Wang, Y.; Kummer, F.

MS404-3 **M-HS32**

Automation of computational modeling by advanced software tools and techniques
Chairperson: G.N. Wells

16:30 3744 Automatically generated solvers for variational formulations of time-dependent partial differential equations
Rognes, M.E.; Kehlet, B.D.; Logg, A.

16:50 3745 Automating the generation of algorithms for generalized least squares problems
Fabregat-Traver, D.; Bientinesi, P.

17:10 3746 Optimization of the impact performance of a metal/polymer composite plate via coupling of a genetic algorithm and a finite element code
Narayanan, K.; Mora, A.; Allsopp, N.; El Sayed, T.

17:30 3747 Unsteady numerical simulation with adaptive mesh refinement of a hypersonic double-cone geometry for re-entry phenomena prediction
Reichel, S.

17:50 3747a NEW A domain-specific embedded language in C++ for lowest-order discretizations of diffusive problems on general meshes
Di Pietro, D.A.; Gratien, J.-M.; Prud'homme, C.

MS607-2 **Robustness analysis** **J-HS18**
Chairpersons: C. Bucher; J. Will

16:30 3748 System reliability analysis of slender network arch bridges
Rønnquist, A.; Naess, A.

16:50 3749 Efficient sensitivity analysis for virtual prototyping
Most, T.

17:10 3750 Separating stochastic processes by robust measures
Podrouzek, J.

MS610 **Acoustics** **J-HS17**
Chairperson: R.H. Steinbuch

16:30 3751 cancellled Frequency-domain analysis method of semi-infinite acoustic medium with uniform cross section
Li, S.

16:50 3752 Effect of electronic device assembly (fixture tube) on the frequency response of a miniature loudspeaker during end use
Pawar, S.J.; Huang, J.H.; Hong, Z.J.

17:10 3753 Modelling aircraft cabin sources and input parameter uncertainty for a ray tracing algorithm
Hoge, K.; Rescheleit, M.; von Estorff, O.

17:30 3754 Acoustics simulation – Introduction and engineering applications
Peters, S.; Moosrainer, M.

MS615-1 **J-SR63**

Advanced beam models
Chairperson: R. Gonçalves

16:30 3755 Numerical formulation of kinematically exact three-dimensional beam based on strain measures **(Keynote Lecture)**
Cesarek, P.; Saje, M.; Zupan, D.

17:00 3756 A 3D shear deformable beam element based on the absolute nodal coordinate formulation applied to classical buckling problems **(Keynote Lecture)**
Nachbagauer, K.; Gruber, P.G.; Gerstmayr, J.

Wednesday, September 12, 2012, 16:30 - 18:30

17:30 3757 The rotational quaternion-based beam FEM formulations
Zupan, E.; Saje, M.; Zupan, D.

17:50 3758 Dynamics of corotational beam elements in large displacements and rotations - some aspects on the kinetic energy and the integration of the equations of motions
Foti, F.; Martinelli, L.

18:10 3759 A geometrically exact beam model with nonuniform warping coherently derived from the Saint Venant rod
Garcea, G.; Bilotta, A.; Genoese, A.; Genoese, A.

MS620-1 **M-HS47**

Waves and computation
Chairperson: D. Givoli

16:30 3760 On the computation of high-intensity, focused ultrasound field in soft tissue-like solids **(Keynote Lecture)**
Guzina, B.; Dontsov, E.V.

17:00 3761 A time-domain discontinuous Galerkin method for mechanical resonator quality factor computations **(Keynote Lecture)**
Govindjee, S.; Persson, P.

17:30 3762 High order discontinuous Galerkin methods for seismic wave propagations in complex media
Antonietti, P.F.; Mazzieri, I.; Quarteroni, A.; Rapetti, F.

17:50 3763 A high-order discontinuous Galerkin method for seismic wave propagation in heterogeneous media
Glinsky, N.; Mercerat, D.

18:10 3764 Retarded potentials and discontinuous Galerkin methods with upwind fluxes for Friedrichs systems on unbounded domains
Abboud, T.; Joly, P.; Rodríguez, J.

MS630-3 **J-HS15**

Advances in computational modelling of recrystallization and grain growth
Chairperson: E. Holm

16:30 3765 Identification of recrystallizing grains during automated SEM/EBSD data post-processing considering nearest neighbors
Kühbach, M.; Loeck, M.; Sukhopar, O.; Bollmann, C.

16:50 3766 Static recrystallization model by multi-phase-field method and finite element method based on crystal plasticity
Chinzei, S.; Takaki, T.

17:10 3767 Wang tilings in partition of unity methods
Novak, J.; Kucerova, A.; Zeman, J.

MS634-1 **M-HS30**

Advanced approaches for shape optimisation
Chairperson: K. Bletzinger

16:30 3768 Aerodynamic shape optimization of turbomachinery components **(Keynote Lecture)**
Meyer, M.

17:00 3769 Discrete adjoint solvers in industrial design **(Keynote Lecture)**
Müller, J.; Christakopoulos, F.; Jahn, W.; Xu, S.

17:30 3770 Adjoint boundary conditions for turbomachinery flows
Frey, C.; Engels-Putzka, A.; Kügeler, E.

17:50 3771 Adjoint mesh deformation and adjoint-based sensitivities with respect to boundary values
Engels-Putzka, A.; Frey, C.

18:10 3772 One-shot optimisation with grid adaptation using adjoint sensitivities
Jaworski, A.; Müller, J.; Rokicki, J.

MS638-4 **J-SR10**

Error estimation and modeling adaptation in computational mechanics
Chairperson: P. Diez

16:30 3773 2 grid/reduced basis method for model reduction
(Keynote Lecture)
Maday, Y.

17:00 3774 Adaptive finite element method for modeling and analysis of electro-mechanical systems **(Keynote Lecture)**
Zboinski, G.

17:30 3775 Some recent numerical approaches for random heterogeneous materials
Legoll, F.

17:50 3776 Goal-oriented error estimation and adaptive control in the reduction of nonlocal particle models
Chamoin, L.; Marchais, J.; Rey, C.

18:10 3777 A reduced basis approach to real-time parameter estimation for parametrized parabolic partial differential equations
Grepl, M.; Veroy, K.

MS640-2 **J-HS14**

Partitioned simulation of coupled problems
Chairperson: R. Rossi

16:30 3778 Weak coupling for fluid-fluid interaction - application in hemodynamics
Fernández, M.; Gerbeau, J.; Smaldone, S.

16:50 3779 Stability analysis of different combinations of time-integration schemes in fluid-structure interaction simulations
Taelman, L.; Degroote, J.; Segers, P.; Vierendeels, J.

17:10 3780 Partitioned simulation of long and slender cylinders corresponding to nuclear fuel rods vibrating in axial flow
De Ridder, J.; Degroote, J.; Van Tichelen, K.; Vierendeels, J.

17:30 3781 Wind-structure interaction
Hojjat, M.; Stavropoulou, E.; Wüchner, R.; Bletzinger, K.

17:50 3782 Partitioned solution of the unsteady adjoint equations for a strongly coupled fluid-structure interaction problem
Degroote, J.; Hojjat, M.; Stavropoulou, E.; Wüchner, R.; Bletzinger, K.

MS656-3 **J-SR62**

Inverse Problems
Chairperson: M. Bonnet

16:30 3783 The DORT method for small dielectric inhomogeneities
Burkard, C.; Ramdani, K.

16:50 3784 Why the inverse scattering by topological sensitivity may work
cancelled **Guzina, B.**

17:10 3785 Emerging crack fronts identification from tangential surface displacements
Andrieux, S.; Baranger, T.

17:30 3786 On the solution of inverse obstacle elasto-acoustic scattering problems by a regularized Newton method
Barucq, H.; Djellouli, R.; Estecahandy, E.

17:50 3787 Topological derivative of energy cost functionals - application to flaw identification
Bonnet, M.

Wednesday, September 12, 2012, 16:30 - 18:30

MS658-2 **M-HS48**

Computational modelling of tire, pavement and interaction phenomena
Chairperson: M. Kaliske

16:30 3788 Structural optimization of tires with consideration of tire-pavement interaction
Serafinska, A.; Kaliske, M.; Zopf, C.; Wollny, I.

16:50 3789 Numerical investigation of the effect of hydroplaning on braking and directional stability of passenger car tires
Srirangam, S.K.; Scarpas, A.; Kasbergen, C.; Anupam, K.

17:10 3790 Hierarchical simulation of friction for evaluation of skid resistance
Weise, M.; Ressel, W.

17:30 3791 An innovative numerical tool to analyse the rolling and sliding friction of viscoelastic materials
Carbone, G.; Putignano, C.

17:50 3792 Simulation of tyre/road noise by means of a FEM/BEM approach
Schutte, J.H.; Wijnant, Y.H.; de Boer, A.

18:10 3793 Some aspects of tire computational modeling
Assaad, M.C.; Ebbott, T.

MS664-5 **J-SR20**

Recent advances in boundary element and meshless methods
Chairperson: D. Polyzos

16:30 3794 A B-spline meshless formulation for plate bending analysis
Sorić, J.; Hoster, J.; Jarak, T.

16:50 3795 Two-level strain smoothing meshfree formulation for damage analysis
Wang, D.

17:10 3796 Local RBF collocation method and fictitious time integration method for solving the obstacle problems
Chan, H.; Fan, C.

17:30 3797 Ad hoc meshless technique for laminate composite structures
Glushkov, E.; Glushkova, N.; Eremin, A.

17:50 3798 A fast multipole singular boundary method for potential problems
Chen, W.; Wang, H.; Liu, C.; Gu, Y.

18:10 3799 Singular boundary method for stress analysis in multi-layered coating systems
Gu, Y.; Chen, W.

TS007-2 **M-HS46**

Computational biomechanics
Chairperson: C. Hellmich

16:30 3800 Numerical analysis of the effect of flexible wall elements on flow behavior
Ito, A.; Takeuchi, S.; Kajishima, T.

16:50 3801 Particle methods for 3D biological flows with variable density and viscosity
Chatelin, R.; Poncet, P.

17:10 3802 An arbitrary Langrangian-Eulerian approach for the numerical simulation of Drosophila flight
Sahin, M.; Erzincanli, B.

17:30 3803 On the uncertainty quantification of blood flow viscosity and geometrical configuration of the portal vein
Pereira, J.C.; Moura, J.S.; Ervilha, A.R.; Pereira, J.C.F.

TS012-8 **M-HS21**

Computational fluid mechanics
Chairperson: E. Hachem

16:30 3804 Laminar heat and fluid flow past a porous particle of different shaped and sized grains
Wittig, K.; Nikrityuk, P.A.

16:50 3805 Taylor-Couette flow control by the outer cylinder cross-section variation strategy
Oualli, H.; Lalaoua, A.; Hanchi, S.; Bouabdallah, A.

17:10 3806 Free surface wave motion interaction with moving bluff body
Kocabiyik, S.

17:30 3807 A coupled high-resolution fractional-step artificial compressibility and pressure-projection formulation for solving incompressible multi-species variable density flow problem at low Reynolds numbers
Könözsy, L.; Drikakis, D.

TS017-2 **J-UG22**

Computational materials science
Chairperson: C. Miehe

16:30 3808 Anisotropic viscoelasticity within the framework of isothermal two-mechanism models
Kröger, N.H.; Wolff, M.

16:50 3809 Eight-chain model and its variants for hyperelastic rubber-like materials: a comparative study
Amin, A.S.; Hossain, M.; Kabir, N.

17:10 3810 Micromechanical modelling for viscoelastic electro-active polymers
Hossain, M.; Vu, D.K.; Steinmann, P.

17:30 3811 Multi-scale approaches of strain ageing effect in polycrystalline tantalum
Colas, D.; Forest, S.; Finot, E.; Flouriot, S.; Mazière, M.; Paris, T.

17:50 3812 Unified multiscale model for predicting the mechanical behavior of textile reinforced concrete
Guan, X.F.; Liu, X.; Zhang, J.L.; Yuan, Y.

18:10 5469 Evaluation of the CNT agglomeration impact on the mechanical properties of CNT-based polymer composites
Leclerc, W.; Karamian-Surville, P.

TS025-8 **J-HS11**

Computational solid and structural mechanics
Chairperson: J. Mergheim

16:30 3813 Modeling and computational challenges of multi-decade concrete creep effects: an issue of concern for infrastructure sustainability
Bažant, Z.P.; Wendner, R.; Hubler, M.H.; Yu, Q.

16:50 cancelled 3814 An adaptive finite element approach for simulation of crack propagation using configurational force
Mousavi Nezhad, M.; Pearce, C.; Kaczmarczyk, L.

17:10 3815 Two dimensional creep analysis of a linear cracked viscoelstic medium using the extended finite element method
Hajikarimi, P.; Mohammadi, S.; Aflaki, S.

17:30 3816 Finite strain fracture analysis using the extended finite element method
Rashetnia, R.; Mohammadi, S.; Mahmoudzadeh Kani, I.

17:50 3817 An improved thermal-structural finite element model for ductile-to brittle failure mode transition to model ductile material behavior at high strain rates
Écsi, L.; Élesztős, P.

TS028-2 **M-HS50**

Design optimization techniques that require extensive CFD and coupling/linkage methods
Chairperson: M. Widhalm

16:30 3818 Design optimisation of a morphing UAV aerofoil/wing using computational intelligence system coupled to game strategy
Lee, D.S.; Periaux, J.; Bugeda, G.; Oñate, E.

Wednesday, September 12, 2012, 16:30 - 18:30

16:50 3819 Multi-point shape and setting optimization of high-lift airfoils in both take-off and landing conditions
Benini, E.; Ponza, R.; Iannelli, P.; Strüber, H.; Hrncir, Z.; Moens, F.; Kuehn, T.

17:10 3820 High lift devices design of a supersonic transport aircraft based on 3D computational fluid dynamics
Gaffuri, M.; Brezillon, J.

17:30 3821 Application of the Multiple Gradient Algorithm (MGDA) and metamodels to a multi-objective optimization problem in aerodynamics
Zerbinati, A.; Desideri, J.; Duvigneau, R.

17:50 3822 Pure and hybrid optimizers applicable to aeronautical design problem
Chiba, K.

TS036-3 **M-HS41**

Multi-phase flows
Chairperson: T. Kajishima

16:30 3823 Coupling numerical simulations of mold filling processes with numerical simulations on bubble scale for polyurethane foams
Geier, S.G.; Bartels, F.W.; Piesche, M.

16:50 3824 Numerical study on focusing of ultrasounds in microbubble-enhanced high intensity focused ultrasound therapy
Okita, K.; Takagi, S.; Matsumoto, Y.

17:10 3825 Numerical simulation of wave propagation in two-phase fluid
Tsurumi, N.; Matsumoto, Y.

17:30 3826 The extended finite element method applied to 3D free-surface flows
Sauerland, H.; Fries, T.

17:50 3827 Free surface flow computations using the M-CICSAM scheme added with a sharpening procedure
Khrabry, A.; Smirnov, E.; Zaytsev, D.

TS060-3 **M-HS23**

Turbulences and vortices
Chairperson: K. Tesch

16:30 3828 A novel nodal integral method based solution for buoyancy driven flows
Kumar, N.; Singh, S.; Doshi, J.B.

16:50 3829 Efficiently simulating viscous flow effects by means of regularization turbulence modeling and local grid refinement
van der Plas, P.; van der Heiden, H.J.L.; Veldman, A.E.P.; Luppes, R.; Verstappen, R.W.C.P.

20:00

Congress Banquet at the City Hall & Orangery at Schönbrunn Palace

Thursday, September 13, 2012, 08:00 - 10:00

08:00 - 08:40

SPL19 **M-Audimax**

Semi-Plenary Lecture
Chairperson: O. Allix

08:00 4000 Contact modeling, new formulations and insights
Wriggers, P.

SPL20 **J-HS10**

Semi-Plenary Lecture
Chairperson: A. Pandolfi

08:00 4001 Towards real time multiscale simulation of cutting in non-linear materials with applications to surgical simulation and computer guided surgery
Bordas, S.P.A.; Kerfriden, P.; Miller, K.; Rabczuk, T.; Courtecuisse, H.; Faure, F.; Cotin, S.

SPL21 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: S. Reese

08:00 4002 Recent developments in structural and multidisciplinary topology optimization
Sigmund, O.

08:40 - 09:20

SPL22 **M-Audimax**

Semi-Plenary Lecture
Chairperson: F. Brezzi

08:40 4003 Analysis of fluid-soil-structure-interaction problems with a combination of particle, discrete and finite element methods
Oñate, E.; Celigueta, M.A.; Idelsohn, S.R.; Salazar, F.; Larese De Tetto, A.; Rossi, R.

SPL23 **J-HS10**

Semi-Plenary Lecture
Chairperson: M. Bischoff

08:40 4004 Computational fluid-solid-+-Mechanics in bio-medical engineering – where to go from here?
Wall, W.A.

SPL24 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: M. Geers

08:40 4005 Aspects of approximation with cut finite elements
Hansbo, P.; Burman, E.

09:20 - 10:00

SPL25 **M-Audimax**

Semi-Plenary Lecture
Chairperson: Z.P. Bažant

09:20 4006 Multiscale modeling and simulation of materials
Ortiz, M.

SPL26 **J-HS10**

Semi-Plenary Lecture
Chairperson: P. Steinmann

09:20 4007 Analysis of static and dynamic quasicontinuum methods
Chen, C.D.

SPL27 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: C. Miehe

09:20 4008 High performance model-order-reduction methods in computational multi-scale simulations of non-linear solids
Oliver, X.; Hernández, J.A.; Huespe, A.; Caicedo, M.

10:00 – 10:30

Coffee Break

Thursday, September 13, 2012, 10:30 - 12:30

10:30 - 12:30

MS101-3 **M-HS28**

Computational biomechanics
Chairperson: B.V. Rietbergen

10:30 4100 A molecular dynamics study on deformation of graphene sheets induced by adsorption of peptides
Cheng, Y.; Zhang, Z.; Teo, Z.; Gao, H.

10:50 4101 Linear and non-linear μFE models of human bones: revisiting methods, simulation issues, selected results
Pahr, D.H.

11:10 4102 Multiscale micromechanics-based elasticity from micro-CT scans of mouse femur
Blanchard, R.; Dejaco, A.; Bongaers, E.; Hellmich, C.

11:30 4103 The role of disorder in the mechanical control of trabecular bone as a cellular solid structure
Ruffoni, D.; Maurer, M.M.; Weinkamer, R.; Müller, R.

11:50 4104 FE model and quasi-static unloading tests deliver consistent values of Young's modulus of rapid-prototyped tissue engineering scaffold, made of PLLA and TCP
Luczynski, K.W.; Dejaco, A.; Brynk, T.; Jaroszewicz, J.; Swieszkowski, W.; Hellmich, C.

12:10 4105 A logarithmic strain decomposition for modeling of trabecular bone subjected to large compressive strains
Horak, M.; Jirasek, M.; Zysset, P.

MS102-4 **M-HS07**

Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials
Chairperson: M. Geers

10:30 4106 Multiscale simulation of Li-ion battery Si electrodes **(Keynote Lecture)**
Cho, M.; Chang, S.; Moon, J.; Cho, K.

11:00 4107 Topology optimization of microstructures for inelastic composite materials applying decoupling multi-scale analysis **(Keynote Lecture)**
Kato, J.; Terada, K.; Kyoya, T.

11:30 4108 Multiscale modelling of continua with energetic surfaces at the microscale
Javili, A.; McBride, A.; Steinmann, P.; Davydov, D.

11:50 4109 Homogenization of Stokes flow in porous media
Sandström, C.; Larsson, F.; Runesson, K.; Johansson, H.

12:10 4110 Solving microstructural problems defined by digital images in the context of finite strains using a space- Lippmann Schwinger iterative scheme
Nezamabadi, S.; Yvonnet, J.

MS104-4 **J-UG21**

Damage to fracture strategies, elasto-plastic crack initiation and propagation
Chairperson: P. Bouchard

10:30 4111 Damage anisotropy
Lodygowski, T.; Sumelka, W.

10:50 4112 Numerical constitutive model for wood with elastic-plastic characteristic
Oppel, M.; Jahreis, M.G.

11:10 4113 Constitutive modelling of damage in adhesively-bonded joints for static and cyclic sustained loadings with constant and variable amplitudes
Matzenmiller, A.; Kroll, U.

11:30 4114 Numerical simulation of stable fatigue crack growth rate using a cohesive zone model
Silitonga, S.; Maljaars, J.; Soetens, F.; Snijder, H.H.

MS111-1 **M-Elise Richter**

Toward multiscale and adaptive PUM for fracture and heterogeneous media
Chairperson: P. Kerfriden

10:30 4115 Optimally convergent high-order X-FEM for problems with voids and inclusions **(Keynote Lecture)**
Sala-Lardies, E.; Fernández-Méndez, S.; Huerta, A.

11:00 4116 Simulation of dynamic fracture processes in polycrystalline silicon microsystems by means of a multi-step, domain decomposition method **(Keynote Lecture)**
Confalonieri, F.; Cocchetti, G.; Ghisi, A.; Corigliano, A.

11:30 4117 Investigations of different crack propagation criteria in simulations of concrete behaviour using XFEM
Bobiński, J.; Tejchman, J.

11:50 4118 Error-controlled multiscale XFEM for crack propagation at macro-scale and crack initiation at micro-scale of ceramic materials
Stein, E.; Gerasimov, T.; Loehnert, S.; Rüter, M.

12:10 4119 Delamination in micro-electronic devices - towards interface engineering
van der Sluis, O.; Noijen, S.; Timmermans, P.; Fanicchia, F.

MS113-1 **J-UG22**

Numerical simulation of microstructures
Chairperson: K. Sab

10:30 4120 Computed tomography-based modelling of polymeric foams **(Keynote Lecture)**
van Dommelen, J.; Wismans, J.; Govaert, L.

11:00 4121 3D microstructural imaging as a guide for computational models for cement-based materials **(Keynote Lecture)**
Landis, E.N.; Bolander, J.E.

11:30 4122 Morphology effects on plasticity behavior of cellular materials
Imatani, S.

11:50 4123 FFT-based simulation of textured polycrystals under finite strain
Delannay, L.; Kanjarla, A.K.; Lebensohn, R.A.

12:10 4124 Multi-scale modelling of hybrid laminates
Helfen, C.; Diebels, S.

MS123-1 **J-HS14**

Innovative numerical approaches for multi-physics problems
Chairpersons: K. Weinberg; R. Krause

10:30 4125 Fluid structure interaction in a weakened basilar artery
Montanino, A.; Angelillo, M.

10:50 4126 A coupled electromechanical material model for active tissues
Gizzi, A.; Cherubini, C.; Filippi, S.; Pandolfi, A.

11:10 4127 A coupled 1D/3D model for spinal spacer simulation
Steiner, J.; Krause, R.

11:30 4128 Permanent effects in shape memory alloys
Barrera, N.; Biscari, P.; Urbano, M.

11:50 4129 Multiscale modeling of electrolyte diffusion in fracturing materials
Meschke, G.; Timothy, J.J.

12:10 4130 Energy-based variational modelling for adiabatic shear band structure
Su, S.; Stainier, L.

Thursday, September 13, 2012, 10:30 - 12:30

MS125 **M-HS48**

Computational methods for generalised continua and higher order and multiscale homogenisations
Chairpersons: C. Sansour; S. Skatulla

10:30 4131 A micromorphic continuum formulation and its application to elastic size-scale effects
Skatulla, S.; Sansour, C.

10:50 4132 Spatial behavior in the electromagnetic theory of microstretch elasticity
Gales, C.B.

11:10 4133 Total Lagrangian nonlinear finite element analysis of finite strain micromorphic pressure-sensitive elastoplasticity
Regueiro, R.; Isbuga, V.

11:30 4134 Simulation of quasi-brittle failure by means of a continuum damage model based on first order strain gradient elasticity
Mühlich, U.M.; Kuna, M.

11:50 4135 Finite calculus. A paradigm for deriving stabilized finite element methods in computational mechanics
Oñate, E.; Cotela, J.; Rossi, R.; Idelsohn, S.R.

12:10 4136 Numerical modeling of 3 point bending test of a reinforced concrete beam using a second gradient theory
Jouan, G.; Kotronis, P.; Collin, F.

MS301-1 **J-SR64**

High-order methods for hyperbolic problems
Chairperson: C. Parés

10:30 4137 IMEX Runge-Kutta schemes for hyperbolic systems with diffusive relaxation
Russo, G.; Boscarino, S.

10:50 4138 Partially implicit high order Runge-Kutta methods for wave-like equations in spherical-type coordinates
Cordero-Carrión, I.

11:10 4139 Design of optimal explicit Runge-Kutta schemes for the spectral difference method applied to wave propagation problems
Parsani, M.; Ketcheson, D.I.; Deconinck, W.

11:30 4140 Generalized convection-diffusion through the discrete representation of the Lie derivative
Rebelo, P.P.; Palha, A.; Kreeft, J.; Gerritsma, M.

MS303-1 **J-HS17**

Innovative methods for fluid structure interaction
Chairperson: R. Ohayon

10:30 4141 An embedded boundary method for multi-material fluid-structure interaction problems with large deformations and crack propagation **(Keynote Lecture)**
Wang, K.; Farhat, C.; Lea, P.D.; Belytschko, T.

11:00 4142 Fluid-structure interaction using a Nitsche overlapping mesh method **(Keynote Lecture)**
Larson, M.G.; Logg, A.; Massing, A.

11:30 4143 An adaptive finite element method for unified continuum fluid-structure interaction
Degirmenci, N.C.; Jansson, J.; Hoffman, J.

11:50 4144 Some issues in unfitted methods and possible solutions: with applications to fluid dynamics problems
Auricchio, F.; Lefieux, A.; Boffi, D.; Gastaldi, L.; Reali, A.

MS401 **M-HS31**

Modelling of vacuum gas dynamics problems
Chairperson: R. Giannantonio

10:30 4145 Two dimensional rarefied gas mixtures flows driven by surface absorption
Frezzotti, A.; Ghiroldi, G.P.; Gibelli, L.; Legrenzi, P.

10:50 4146 Residual gas density estimation for the vacuum chamber of the ATLAS interaction region of the Large Hadron Collider
Bregliozzi, G.; Lanza, G.

11:10 4147 Gas dynamics in particle accelerator design
Malyshev, O.

11:30 4148 On the evaluation of damping in micro-electro-mechanical systems devices according to the kinetic theory of gases
Bonucci, A.; Lorenzani, S.

11:50 4149 The use of flow network tools for geometrically complex vacuum gas dynamics problems
Day, C.; Giegerich, T.; Hauer, V.; Luo, X.; Varoutis, S.

12:10 4150 Design and analysis of vacuum systems with the method of angular coefficients: limits and advantages
Bonucci, A.

MS615-2 **J-SR63**

Advanced beam models
Chairperson: R. Gonçalves

10:30 4151 Enhanced formula for a critical velocity of a uniformly moving load
Dimitrovová, Z.

10:50 4152 Problems of analysis of thin-walled structures – statics, free vibrations and sensitivity
Mikulski, T.; Kujawa, M.; Szymczak, C.

11:10 4153 Effect of initial imperfections in dynamic buckling analysis of FG plates
Kowal-Michalska, K.; Mania, R.

11:30 4154 Free and forced nonlinear vibrations of 3D beams with non-symmetrical cross section
Stoykov, S.; Ribeiro, P.

11:50 4155 Dynamic stiffness derivation for exact solution of high order thick beam models
Eisenberger, M.

12:10 4156 Free vibration of functionally graded beams using the dynamic stiffness method
Su, H.; Banerjee, J.R.

MS619-1 **J-HS12**

Advances in computational dynamics of structures
Chairperson: E.J. Sapountzakis

10:30 4157 New FGM beam finite element for modal analysis of the 2D beam structures
Murin, J.; Aminbaghai, M.; Hrabovsky, J.; Kutis, V.

10:50 4158 Analysis of vibro-based isolated building
Makovicka, D.; Makovicka, D.

11:10 4159 Remarks on time integration schemes used for high precision control
Steinbuch, R.H.

11:30 4160 Non axisymmetric free vibration analysis of linearly varying thickness shells of revolution by a bi-hierarchical finite element
Ouissi, M.N.; Houmat, A.

11:50 4161 Transverse vibration of slender sandwich beams with viscoelastic inner layer via a Galerkin-type state-space approach
Ntotsios, E.; Palmeri, A.

12:10 4162 Numerical and analytical determination of multispan cable eigenfrequencies
Ivanova, O.A.

Thursday, September 13, 2012, 10:30 - 12:30

MS620-2 **M-HS47**

Waves and computation
Chairperson: G. Seriani

10:30 4163 A quasi-optimal domain decomposition algorithm for solving the Helmholtz equation
Antoine, X.; Boubendir, Y.; Geuzaine, C.

10:50 4164 Time Reversed Absorbing Condition (TRAC): recreate the past & applications to inverse problems
Assous, F.; Kray, M.; Nataf, F.

11:10 4165 Stable absorbing layer for convective wave equation
Sim, I.; Kaltenbacher, M.

11:30 4166 Efficient solution methodology based on a local wave tracking strategy for high-frequency Helmholtz problems
Amara, M.; Chaudhry, S.; Diaz, J.; Djellouli, R.; Grigoroscuta-Strugaru, M.

11:50 4167 Runge-Kutta based explicit local time-stepping methods for wave propagation
Grote, M.; Mehlin, M.; Mitkova, T.

12:10 4168 High-order numerical methods for underwater acoustic scattering problems
Lähivaara, T.; Huttunen, T.

MS621 **J-SR53**

Computational damage mechanics of composites
Chairperson: J.L. Curiel Sosa

10:30 4169 Simulation of damage in laminates
Curiel Sosa, J.L.; Munoz, J.J.; Pinho, S.T.; Li, Q.; Beg, O.A.

10:50 4170 A continuous/discrete multiscale analysis of compressive failure in laminates
Feld, N.; Allix, O.; Baranger, E.; Guimard, J.

11:10 4171 Computational approach to the fatigue behaviour of randomly or unidirectional fibre reinforced materials
Brighenti, R.; Carpinteri, A.; Scorza, D.

11:30 4172 Peel tack simulation with applied cohesive fracture in reference to feed rate and compaction force
Lichtinger, R.; Tang, J.; Drechsler, K.

11:50 4173 An extended phantom node method for crack interactions in composites
Chen, B.; Baiz, P.M.; Pinho, S.T.; Tay, T.

MS625-1 **M-HS34**

High order fictitious domain methods: basic principles and engineering applications
Chairperson: J. Parvizian

10:30 4174 Isogeometric finite cell analysis **(Keynote Lecture)**
Rank, E.; Ruess, M.; Kollmannsberger, S.; Schillinger, D.; Düster, A.

11:00 4175 Computation of heterogeneous materials based on the finite cell method **(Keynote Lecture)**
Düster, A.; Joulaian, M.

11:30 4176 The finite cell method for contact problems in solid mechanics
Bog, T.; Zander, N.; Kollmannsberger, S.; Rank, E.

11:50 4177 Field simulation in 3D domains with geometric defects
Gasparini, R.; Kosta, T.; Tsukanov, I.

12:10 4178 The unfitted discontinuous Galerkin method in flow problems
Heimann, F.; Engwer, C.; Bastian, P.

MS632-1 **M-HS16**

Method of fundamental solutions
Chairperson: B. Sarler

10:30 4179 Implementation of MFS to problems with equations with unknown fundamental solution
Uscilowska, A.; Kolodziej, J.A.

10:50 4180 MFS for modelling of inhomogeneous materials with large aspect ratio reinforcing elements
Kompis, V.; Zmindak, M.

11:10 4181 Application of the method of fundamental solutions for inverse problem related to the determination of elasto-plastic properties of cylindrical bar
Kolodziej, J.A.; Jankowska, M.; Mierzwiczak, M.

11:30 4182 Application of the method of fundamental solutions for the plane elastoplastic problem
Jankowska, M.A.; Kolodziej, J.A.

11:50 4183 The method of fundamental solutions for the solution of inverse geometric problems
Karageorghis, A.; Lesnic, D.; Marin, L.

MS634-2 **M-HS30**

Advanced approaches for shape optimisation
Chairperson: J. Müller

10:30 4184 Intrinsic parameters for mechanical shape design
du Cauze de Nazelle, P.; Fourcade, C.; Gillot, F.; Tourbier, Y.; Jezequel, L.

10:50 4185 Parameter free optimization applied to free form, bead and composite fiber optimization
Masching, H.; Fischer, M.; Bletzinger, K.

11:10 4186 Parameter-free shape optimization in CFD and FSI problems: geometry treatment and regularization challenges
Stavropoulou, E.; Hojjat, M.; Wüchner, R.; Bletzinger, K.

11:30 4187 Transient simultaneous multi-layered shape and material optimisation for elastic vocal fold models
Schmidt, B.; Döllinger, M.; Stingl, M.

11:50 4188 Two level optimization of vehicle crash structures
Fender, J.; Duddeck, F.; Zimmermann, M.

12:10 4189 Current developments for shape optimization for crashworthiness based on an implicit parameterization technique
Duddeck, F.

MS638-5 **J-SR10**

Error estimation and modeling adaptation in computational mechanics
Chairperson: L. Chamoin

10:30 4190 Adaptive coupling between stochastic and deterministic continuum models in the framework of the Arlequin method
Zaccardi, C.; Chamoin, L.; Cottereau, R.; Ben-Dhia, H.

10:50 4191 A robust adaptive NXFEM method for the interface problem
Barrau, N.; Becker, R.; Luce, R.

11:10 4192 Towards adaptive turbulence modelling with quantitative a posteriori error control
Larcher, A.; Nazarov, M.; Müller, K.; Hoffman, J.

11:30 4193 On the adaptive use of the quasi continuum method in the context of atomistic-to-continuum modeling of graphene
Memarnahavandi, A.; Larsson, F.; Runesson, K.

11:50 4194 Adaptive solution versus adaptive approximation: first examples
Fierro, F.; Schmidt, A.; Veeser, A.

12:10 4195 Adaptive regularization, linearization, and discretization and a posteriori error control for the two-phase Stefan problem
Yousef, S.; Di Pietro, D.A.; Vohralík, M.

Thursday, September 13, 2012, 10:30 - 12:30

MS656-4 **J-SR62**

Inverse problems
Chairperson: B.B. Guzina

10:30 4196 Parameter identification of time-homogenized models describing material fatigue
Puel, G.; Aubry, D.

10:50 4197 Identification of a vertical crack by the active pulse-echo method using smart layer
Oohigashi, T.; Wataka, Y.; Kubo, S.

11:10 4198 Identification of rate dependent material model parameters based on split Hopkinson pressure bar test and high speed camera with digital image correlation
Garbowski, T.; Gajewski, T.; Lodygowski, T.

11:30 4199 Identification of residual stresses based on indentation curves only
Buljak, V.; Maier, G.

MS664-6 **J-SR20**

Recent advances in boundary element and meshless methods
Chairperson: C. Zhang

10:30 4200 Simulation of hot shape rolling by a meshless method
Hanoglu, U.; Šarler, B.

10:50 4201 The interior field method for Laplace's equation on circular domains with circular holes
Lee, M.M.

11:10 4202 Meshless analysis of circular plate with varying position of piezoactuator
Stanak, P.; Sladek, J.; Sladek, V.; Krahulec, S.

11:30 4203 Free vibration analysis of magnetoelectroelastic beams using meshfree radial point interpolation method
Bui, T.Q.; Zhang, C.

TS007-3 **M-HS46**

Computational biomechanics
Chairperson: P.S. Martins

10:30 4204 Advanced Cardiac Mechanics Emulator (ACME) - simulating the beating heart
Nagler, A.; Gee, M.; Klug, W.S.; Wall, W.A.; Ortiz, M.

10:50 4205 Optical experiments for a muscle model validation
Sturmat, M.; Siebert, T.; Böl, M.

11:10 4206 Multi-scale and multi-physics finite element analyses of articular cartilage and chondrocyte
Nitta, N.; Kuramae, H.; Morita, Y.; Nakamachi, E.

11:30 4207 Toward a synthetic cartilage-like scaffold
Manzano, S.; Herrero, L.; Pelegay, C.; Plazas, C.E.; Doweidar, M.H.; Ochoa, I.; Gomez, J.A.; Perilla, J.E. Gomez, J.L.,Doblaré, M.

TS009-1 **J-HS13**

Computational damage mechanics, dynamic failure and fracture
Chairperson: Z.P. Bažant

10:30 4208 An efficient coupled fluid/structure finite element scheme for blast and impact loads over reinforce concrete structures
Soto, O.A.; Baum, J.D.; Lohner, R.

10:50 4209 Elasto-plastic-damage model with non-local softening enhanced by viscosity to describe dynamic concrete behaviour
Marzec, I.; Tejchman, J.

11:10 4210 Failure modeling of concrete with a novel strain rate sensitive viscoelastic retarded damage material formulation
Häussler-Combe, U.; Kuehn, T.

11:30 4211 A contact algorithm for mesoscale simulation of dynamic fracture and fragmentation with initially rigid interface elements
Büttner, M.; Sauer, M.

11:50 4212 Analysis of dynamic propagation of brittle failure by PDS-FEM with energy balance consideration
Kondo, M.; Oguni, K.

TS013-1 **M-HS42**

Computational geomechanics
Chairperson: W. Wunderlich

10:30 4213 A fully coupled finite element model for hydro-mechanical behaviour of soft rock
Ma, J.; Khalili, N.

10:50 4214 Material point method to simulate large deformation problems in fluid saturated granular medium
Bandara, S.S.; Soga, K.

11:10 4215 Numerical simulation of rock fracturing process under action of disc cutter using finite element method
Li, S.; Qu, F.; Cao, L.; Shangguan, Z.

11:30 4216 3D models in geomechanics: creation, visualization and analysis
Hvesenya, S.S.; Zhuravkov, M.A.

11:50 4217 Application of fractional chaotic models in geotechnics
Magaña, R.; Hermosillo, A.; Pérez, M.

TS017-3 **J-HS15**

Computational materials science
Chairperson: T. Antretter

10:30 4218 Simulation of mechanical and functional properties of porous ceramics in relation with their microstructure
Roussel, D.; Jauffres, D.; Martin, C.; Lichtner, A.; Bordia, R.

10:50 4219 Modeling and simulation of an experiment for determining the interface strength parameters of thin films on compliant substrates
Toth, F.; Cordill, M.J.; Fischer, F.D.; Rammerstorfer, F.G.

11:10 4220 A 3D model for salt diffusion and crystallization in masonry structures
Molari, L.; Castellazzi, G.; Colla, C.; de Miranda, S.; Gabrielli, E.; Ubertini, F.

11:30 4221 Comparative investigation of phase-field models based on free energy and grand potential formulations.
Tschukin, O.; Choudhury, A.; Nestler, B.

11:50 4222 Micro CT-based multiscale elasticity of double-porous (pre-cracked) hydroxyapatite granules for regenerative medicine
Dejaco, A.; Komlev, V.S.; Gurin, A.N.; Jaroszewicz, J.; Swieszkowski, W.; Hellmich, C.

12:10 4223 Finite element code in Python as a universal and modular tool applied to Kohn-Sham equations
Cimrman, R.; Vackář, J.; Novák, M.

TS025-9 **J-HS11**

Computational solid and structural mechanics
Chairperson: M. Bischoff

10:30 4224 Design improvements in railway row-to-row seating
Milho, J.; Carvalho, M.; Ambrósio, J.

10:50 4225 Three dimensional quasi-static analysis of incompressible hyperelasticity using the marker integration Eulerian finite element method
Yamada, T.; Miyajima, R.; Matsui, K.

11:10 4226 Analysis of relative slip on press-fitted contact surface between wheel and axle
Kawashima, H.

11:30 4227 Fatigue analysis of tube sheet welds with multi-pass welding lines
Li, H.; Zheng, Y.; Li, L.

11:50 4228 Impact contact analysis of a fuel assembly for research reactor
Kim, H.; Yim, J.; Lee, B.; Oh, J.; Tahk, Y.

12:10 4229 Numerical simulations of impacts using combined finite-discrete element method
Smoljanović, H.; Živaljić, N.; Nikolić, Ž.

Thursday, September 13, 2012, 10:30 - 12:30

TS026-1 **J-HS16**

Computer simulation of processes and manufacturing
Chairperson: R. Valente

10:30 4230 A coupled fluid/mushy/solid approach for the numerical simulation of welding
Amin el Sayed, H.; Heuze, T.; Feulvarch, E.; Leblond, J.B.; Bergheau, J.M.

10:50 4231 Warm press forming of magnesium with assist of direct cooling using water and induction heating
Tanabe, I.

11:10 4232 On the characterization of the plastic behaviour of sheet metals with bulge test: numerical simulation study
Rodrigues, C.A.; Reis, L.C.; Sakharova, N.A.; Oliveira, M.C.; Fernandes, J.V.

11:30 4233 Influence of bending effect on springback in sheet metal forming
Le Quilliec, G.; Breitkopf, P.; Roelandt, J.

TS030 **M-HS32**

High-order methods
Chairperson: A. Griewank

10:30 4234 Families of arbitrary-high order two-point multioperators and related schemes
Tolstykh, A.

10:50 4235 Comparison of stability and efficiency of high-order DG and WENO schemes for a super-sonic free jet
Harlacher, D.F.; Zudrop, J.; Klimach, H.; Roller, S.P.

11:10 4236 Superconvergent functional computations for time-dependent problems using SBP finite differences
Berg, J.; Nordström, J.

11:30 4237 Second derivative free variants of a continuation methods for solving nonlinear equations
Prashanth, M.; Gupta, D.K.

TS031 **M-HS50**

High-speed and chemically reacting flows
Chairperson: F.G. Rammerstorfer

10:30 4238 Numerical method for the relationsip between velocity of detonation and curvature of diverging detonation
Cheng, J.

10:50 4239 Large-eddy-simulation of the HyShot-II scramjet combustion chamber
Thornber, B.

11:10 4240 Step configuration influence on combustion in premixed hydrogen-air supersonic flow
Fedorova, N.N.; Goldfeld, M.; Bedarev, I.A.

11:30 4241 Effect of jet injection on flow structure and mixing in channel with sudden expansion
Fedorova, N.N.; Fedorchenko, I.; Goldfeld, M.; Valger, S.A.

11:50 4242 Computational fluid dynamics of partially rarefied flows with coupled kinetic Boltzmann/Navier-Stokes methods
Steijl, R.; Barakos, G.

12:30 - 14:00

Lunch

Thursday, September 13, 2012, 14:00 - 16:00

14:00 - 16:00

MS101-4 **M-HS28**

Computational biomechanics
Chairperson: C. Hellmich

14:00 4400 Numerical simulation of bone fracture healing: a stabilized TDG scheme for the solution of coupled hyperbolic differential equations **(Keynote Lecture)**
Nackenhorst, U.

14:30 4401 Role of porosity and tissue mineral density in determining the elastic properties of cortical bone tissue in the human femoral neck **(Keynote Lecture)**
Sansalone, V.; Bousson, V.; Naili, S.; Bergot, C.; Peyrin, F.; Laredo, J.; Haiat, G.

15:00 4402 Mechanical modelling of human hernia repair based on experimental simulations
Lubowiecka, I.; Tomaszewska, A.; Szymczak, C.; Śmietański, M.

15:20 4403 A sample-specific model of millimeter-scale anisotropic elastic properties of cortical bone
Grimal, Q.; Granke, M.; Peyrin, F.; Laugier, P.

15:40 4404 On the dynamic simulation of a heterogeneous knee joint model
Youett, J.W.

MS102-5 **M-HS07**

Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials
Chairperson: K. Terada

14:00 4405 Multiscale computational homogenization modeling of transient mechanical problems
Pham, K.; Kouznetsova, V.; Geers, M.

14:20 4406 Strain localization analysis of layered materials with debonding interfaces by a second-order homogenization approach
Bacigalupo, A.; Gambarotta, L.

14:40 4407 Continuum dislocation modeling of mechanical annealing
Sandfeld, S.; Hochrainer, T.; Zaiser, M.; Gumbsch, P.

15:00 4408 Non-linear behavior of thin-layered structures under contact and friction
Dorninger, A.; Ludwig, R.; Aigner, L.G.; Karer, E.; Gerstmayr, J.

15:20 4409 Mapping complex microdefects of porous CFRP-laminates onto structured FE-meshes using the GAUSS-point method
Krause, D.; Kreikemeier, J.; Chrupalla, D.

MS103 **M-HS48**

Computational methods for gradient extended theories
Chairpersons: C. Wieners; S. Bargmann

14:00 4410 Numerical approximation of dislocation based elasto-plastic models
Wieners, C.

14:20 4411 Modeling and simulation of inelastic microstructure development and inhomogeneous material behaviour via non-convex rate dependent gradient plasticity
Klusemann, B.; Yalcinkaya, T.; Geers, M.; Svendsen, B.

14:40 4412 On theory and computation of gradient-based multifield inelasticity
Clasen, H.; Hirschberger, C.B.

15:00 4413 A computational procedure for rate-dependent gradient extended crystal plasticity
Bargmann, S.; Reddy, D.

15:20 4414 Computational challenges in using strain-gradient theories in three dimensions
Papanicolopulos, S.; Zervos, A.

15:40 4415 A continuum based study of extrinsic and intrinsic length scale effect of metallic glasses
Liu, J.; Thamburaja, P.

MS111-2 **M-Elise Richter**

Toward multiscale and adaptive PUM for fracture and heterogeneous media
Chairperson: S. Loehnert

14:00 4416 Hybrid model order reduction/domain decomposition methods for efficient simulations in fracture mechanics
Kerfriden, P.; Goury, O.; Bordas, S.P.A.; Rabczuk, T.; Margetts, L.

14:20 4417 XFEM modeling of inelastic material behavior and damage phenomena in composites
Müller, S.; Kästner, M.; Brummund, J.; Ulbricht, V.

14:40 4418 A multiscale framework for 3D crack propagation using the XFEM
Holl, M.; Loehnert, S.; Wriggers, P.

15:00 4419 Computational fracture mechanics using XFEM in SAMCEF: parametric studies and validation on an industrial test case
Henrard, C.; Bruyneel, M.; Delsemme, J.

15:20 4420 Dynamic ductile fracture in shells
Mostofizadeh, S.; Fagerström, M.; Larsson, R.; Sluys, L.J.; Mediavilla, J.

MS113-2 **J-UG22**

Numerical simulation of microstructures
Chairperson: E.N. Landis

14:00 4421 Statistical determination of the representative volume element and effective mechanical properties of stochastic fibers networks
Dirrenberger, J.; Forest, S.; Jeulin, D.

14:20 4422 The maximal advance path constraint for the homogenization of materials with random network microstructure
Linder, C.; Tkachuk, M.

14:40 4423 The effective thermal conductivity of 2D heterogenous media containing imperfectly bonded inclusions
Willot, F.

15:00 4424 Set up of a simulation model to evaluate forces on a mole sampling mechanism for soils in outer space
Zigan, S.

15:20 4425 Buckling phenomena associated with micro-pillar testing
Daum, B.; Rammerstorfer, F.G.; Fischer, F.D.; Dehm, G.

MS118-1 **M-HS23**

Image based modeling of heterogeneous materials
Chairperson: N. Takano

14:00 4426 The finite cell method for imaged based modeling of heterogeneous materials **(Keynote Lecture)**
Kollmannsberger, S.; Zander, N.; Monavari, M.; Ruess, M.; Düster, A.; Rank, E.

14:30 4427 Composite FE simulation of radio frequency ablation and bone elasticity
Schwen, L.O.; Pätz, T.; Preusser, T.

14:50 4428 Acceleration of digital-image-based FEM computation by GPU
Nagai, G.; Ueda, U.; Takai, Y.; Tsukino, M.

15:10 4429 An integrated approach for image-based computation based on the X-FEM: accuracy and high-order approximation
Legrain, G.; Cartraud, P.; Lian, W.

MS123-2 **J-HS14**

Innovative numerical approaches for multi-physics problems
Chairpersons: A. Pandolfi; G. Meschke

14:00 4430 The impact of diffusion laws on the fracture patterns of drying materials: a variational approach
Sicsic, P.; Bourdin, B.; Marigo, J.

Thursday, September 13, 2012, 14:00 - 16:00

14:20 4431 Numerical modeling of coupled thermal-hydro-mechanical processes in artificial ground freezing
Zhou, M.; Meschke, G.

14:40 4432 B-spline based simulations of decomposition and thermal diffusion
Weinberg, K.; Anders, D.

15:00 4433 Speeding-up the numerical simulation of rolling and cold pilgering processes by the multi-mesh method
Kpodzo, K.W.; Fourment, L.; Niang, K.; Montmitonnet, P.

15:20 4434 Wrapping recursive projection-type source codes around commercial CFD codes to perform nonlinear solution space analysis
Cheimarios, N.; Koronaki, E.D.; Boudouvis, A.G.

MS202-1 **M-HS41**

Modelling of medium to dense gas-particle flows - Discrete element methods
Chairperson: C. Goniva

14:00 4435 Fluid-particle flows at BASF – a comparison of current simulation methods
Höfert, M.; Schilling, M.

14:20 4436 Improvement of a resolved open source fluid-particle interaction
Hager, A.; Kloss, C.; Goniva, C.

14:40 4437 Numerical simulation of particle-laden flows along with heat transfer using Eulerian-Lagrangian approach
Iqbal, N.; Rauh, C.; Delgado, A.

15:00 4438 Two way coupled fluid-particle interaction on a deforming unstructured mesh
Srivastava, S.; Yazdchi, K.; Luding, S.

15:20 moved to TS036-2 4439 Coupled CFD-DEM simulation of particle-laden flows in slot die coating system with presence of free surfaces
Akbarzadeh, V.; Hrymak, A.N.

15:40 4440 Shear cell test setup for characterization of bulk material flowability in a granular simulation environment
Fuchs, J.; Weiß, C.

MS210 **M-HS31**

Thin liquid film flow
Chairperson: H. Steiner

14:00 4441 Three-dimensional thin film flow problems solved accurately and efficiently: rivulet formation, merger and evolution
Gaskell, P.H.; Lee, Y.C.; Slade, D.; Veremieiev, S.

14:20 4442 Three-dimensional gravity-driven film flow over topography: full Navier-Stokes solutions
Gaskell, P.H.; Thompson, H.M.; Veremieiev, S.

14:40 4443 Self-organization of falling liquid films: extreme solitary waves and bound states
Nguyen, P.; Chakraborty, S.; Pradas, M.; Ruyer-Quil, C.; Kalliadasis, S.; Bontozoglou, V.

15:00 4444 Thin film flows over spinning discs: past work and future opportunities
Matar, O.K.; Wray, A.

15:20 4445 Numerical analysis of hydrodynamic characteristics of wavy liquid films on rotating disks
Prieling, D.; Steiner, H.; Brenn, G.

15:40 4446 Thin film flow simulation on a rotating disc
Vita, P.; Gschaider, B.; Prieling, D.; Steiner, H.

MS301-2 **J-SR64**

High-order methods for hyperbolic problems
Chairperson: G. Russo

14:00 4447 Progress on finite-volume evolution Galerkin schemes for the shallow water equations
Noelle, S.; Lukacova-Medvidova, M.

14:20 4448 Adaptive characteristic WENO schemes for polydisperse sedimentation
Bürger, R.; Mulet, P.; Villada, L.M.

14:40 4449 High-order finite volume schemes for two-dimensional nonconservative hyperbolic systems
Castro, M.J.; Gallardo, J.M.; Ortega, S.; de la Asunción, M.; Mantas, J.M.

15:00 4450 On a multilayer approach for the simulation of sediment transport
Morales de Luna, T.; Fernandez-Nieto, E.; Kone, E.H.; Bürger, R.

15:20 4451 High order SFV method for the uncertainty quantification in stochastic conservation laws
Tokareva, S.; Mishra, S.

MS303-2 **J-HS17**

Innovative methods for fluid structure interaction
Chairperson: H. van Brummelen

14:00 4452 Finite-element/boundary-element coupling for inflatables
van Opstal, T.; van Brummelen, H.

14:20 4453 Substructuring domain decomposition algorithms for parallel fluid-structure interaction simulations
Badia, S.; Colomés, O.; Martín, A.F.; Principe, J.

14:40 4454 A Newton method for fluid-structure interaction using full Jacobians based on automatic form differentiation
Balaban, G.; Logg, A.; Rognes, M.E.

15:00 4455 Partioned simulation of fluid-structure interactions on parallel machines
Mehl, M.; Atanasov, A.; Gatzhammer, B.; Weinzierl, T.

15:20 4456 XFEM coupling of granular flows interacting with surrounding fluids
Pasenow, F.; Zilian, A.; Dinkler, D.

15:40 4457 Free-surface fluid/structure-interaction for ship hydrodynamic and offshore applications
Akkerman, I.; Hsu, M.; Bazilevs, Y.

MS304-1 **J-UG21**

Highly efficient numerical methods in finance
Chairperson: K. Oosterlee

14:00 4458 ADI schemes for multidimensional option valuation PDEs
Haentjens, T.; in 't Hout, K.

14:20 4459 Adaptive and high-order PDE methods for pricing American options
Christara, C.; Dang, D.M.

14:40 4460 Finite difference methods for pricing American options under finite activity jump-diffusion models
Salmi, S.; Toivanen, J.

15:00 4461 Efficient option pricing for time-inhomogeneous processes
Reichmann, O.

15:20 4462 Analysis and numerical solution of a stock loan pricing model
Pascucci, A.; Vazquez, C.

Thursday, September 13, 2012, 14:00 - 16:00

MS603-1 **J-SR53**

Modeling of fiber-based structures (textiles and textile reinforced composites)
Chairperson: Y.K. Kyosev

14:00 4463 Finite element simulation of the mechanical behaviour of fibrous materials
Durville, D.; Vu, T.D.

14:20 4464 Stochastic modeling of dense packings of bended fibers
Altendorf, H.; Jeulin, D.

14:40 4465 PrePreg composite forming simulation taking into account thermal and viscous effects
Hamila, N.; Boisse, P.

15:00 4466 Simulation of weave construction for seamless 3D woven fabrics
Buesgen, A.; Ehrmann, A.; Bruecken, A.; Aumann, S.

15:20 4467 Optimizing of compressed-air consumption in air-jet weaving machines by modeling and simulation of weft insertion
Sasse, C.; Jungbecker, P.; Stankowski, M.; Seide, G.; Gries, T.

15:40 4468 Pattern classification of fabrics woven from hand-loom and power-loom using support vector machines
Ghosh, A.; Guha, T.; Bhar, R.B.

MS608-1 **M-HS32**

Reduced basis, POD and PGD model reduction techniques
Chairpersons: P. Ladeveze; P. Villon

14:00 4469 Tensor approximation for parameter identification **(Keynote Lecture)**
Matthies, H.G.; Rosic, B.V.

14:30 4470 Real-time simulation of surgery by proper generalized decomposition techniques **(Keynote Lecture)**
Niroomandi, S.; Bordeu, F.; Alfaro, I.; Gonzalez, D.; Leygue, A.; Cueto, E.; Chinesta, F.

15:00 4471 The proper generalized decomposition applied to a practical wave propagation problem
Modesto, D.; Zlotnik, S.; Huerta, A.

15:20 4472 A PGD approach in time, space and macroquantities for solving multiscale problems
Cremonesi, M.; Guidault, P.A.; Néron, D.; Ladeveze, P.

15:40 4473 Efficient solvers for multidimensional physics
Chinesta, F.; Cueto, E.; Leygue, A.

MS615-3 **J-SR63**

Advanced beam models
Chairperson: Z. Dimitrovová

14:00 4474 Mixed 3D beam models: differential-equations derivation and finite-element solutions
Balduzzi, G.; Auricchio, F.; Lovadina, C.

14:20 4475 GBT-based buckling mode identification from finite element analysis of thin-walled members
Nedelcu, M.

14:40 4476 GBT-based local and global post-buckling analysis of Roorda's frame
Camotim, D.; Basaglia, C.

15:00 4477 Elastoplastic collapse analysis of thin-walled beams using generalised beam theory
Gonçalves, R.; Camotim, D.

15:20 4478 Bicriteria optimization of cold-formed thin-walled beams with generalized open shape under eccentric axial load
Rodak, M.

MS619-2 **J-HS12**

Advances in computational dynamics of structures
Chairperson: J. Murin

14:00 4479 Nonlinear seismic response analysis of piles in nonlinear viscoelastic foundation
Sapountzakis, E.J.; Kampitsis, A.E.

14:20 4480 On the analysis of FGM structures using enhanced finite elements
Kugler, S.; Fotiu, P.; Murin, J.

14:40 4481 Second order linearization effects based on the matrix stiffness
Wahrhaftig, A.M.; Rocha, J.A.L.; Brasil, R.

15:00 4482 A new p-version finite element method for non-linear vibrations of damaged Timoshenko beams
Stojanovic, V.; Ribeiro, P.; Stoykov, S.

15:20 4483 A beam to 3D model switch in transient dynamic analysis
Tannous, M.G.; Dureisseix, D.; Cartraud, P.; Torkhani, M.

MS620-3 **M-HS47**

Waves and computation
Chairperson: D. Givoli

14:00 4484 Crack identification in electromagnetic testing using genetic algorithms based on extended finite edge elements
Boisson, J.; Lefèvre, F.; Lohrengel, S.

14:20 4485 A poly-grid SEM approach for wave modeling in complex media
Seriani, G.; Su, C.

14:40 4486 Finite difference simulation of seismic waves in multi-scale media
Lisitsa, V.; Reshetova, G.; Tcheverda, V.

15:00 4487 Efficient global seismic wave propagation: a basis for 3D imaging
Nissen-Meyer, T.; Rietmann, M.; Schenk, O.

15:20 4488 A comparison of explicit continuous and discontinuous Galerkin methods and finite differences for wave propagation in 3D heterogeneous media
Minisini, S.; Mulder, W.A.; Zhebel, E.; Kononov, A.

15:40 4489 Numerical simulation of elastic wave propagation in composite material
Bause, M.; Köcher, U.

MS625-2 **M-HS34**

High order fictitious domain methods: basic principles and engineering applications
Chairperson: E. Rank

14:00 4490 The finite cell method for elasto-plasticity problems
Abedian, A.A.; Parvizian, J.; Düster, A.

14:20 4491 Discretization of CT-data in the development of electric tools and accessories using fictitious domain methods
Nübel, V.; Kollmannsberger, S.

14:40 4492 High-order X-FEM for image-based computations
Legrain, G.; Chevaugeon, N.

15:00 4493 Application of a higher-order fictitious domain method to the NC-milling
Byfut, A.; Joliet, R.; Schröder, A.; Surmann, T.

15:20 4494 Spectral fictitious domain methods with internal forcing for solving elliptic problems
Le Penven, L.; Buffat, M.

15:40 4495 Hybrid Cartesian immersed boundary flow simulations using a second order penalized direct forcing method
Introïni, C.; Belliard, M.; Fournier, C.

MS632-2 **M-HS16**

Method of fundamental solutions
Chairperson: M. Zmindak

14:00 4496 Non-singular method of fundamental solutions for elasticity problems
Sarler, B.; Liu, Q.

Thursday, September 13, 2012, 14:00 - 16:00

14:20 4497 A numerical method for two-dimensional backward problems of Schrödinger equation in quantum mechanics
Jiang, T.S.; Tsai, C.

14:40 4498 Numerical solutions of direct and inverse Stokes problem by the method of fundamental solutions and Laplacian decomposition
Fan, C.; Chan, H.

15:00 4499 Stress around a center hole in a finite plate subjected to internal pressure by MFS
Fujisaki, W.; Fujisawa, T.

15:20 4500 Modeling of the creep flow in the vessel with a constriction by the method of fundamental solutions
Mierzwiczak, M.

MS634-3 **M-HS30**

Advanced approaches for shape optimisation
Chairperson: F. Duddeck

14:00 4501 Interactive topology optimization
Aage, N.; Nobel-Jørgensen, M.; Andreasen, C.S.; Sigmund, O.

14:20 4502 Efficient topology optimization using local rules of cellular automata
Bochenek, B.; Tajs-Zielinska, K.

14:40 4503 Phase-field topology optimization model using double-obstacle function
Takaki, T.

15:00 4504 Shape and topology optimization of multi-layered composite materials
Allaire, G.; Delgado, G.

15:20 4505 Structural optimization of high voltage latticed towers with discrete and continuum design variables
París, J.; Martínez, S.; Colominas, I.; Navarrina, F.; Casteleiro, M.

MS657-1 **J-SR20**

Fast boundary element methods: analysis, numerics and applications
Chairperson: M. Bonnet

14:00 4506 A new fast multipole method for elasticity based on the half-space fundamental solutions
Chaillat, S.; Bonnet, M.

14:20 4507 Fast convolution quadrature for the wave equation in 3D
Banjai, L.; Kachanovska, M.

14:40 4508 OSRC preconditioning and fast multipole method for high-frequency scattering problems
Darbas, M.; Darrigrand, E.

15:00 4509 A Calderon-preconditioned periodic FMM for acoustic-elastodynamic coupled problems
Isakari, H.; Nishimura, N.

15:20 4510 Calderon's preconditioning with roof top basis for Maxwell's equations
Niino, K.; Nishimura, N.

15:40 4511 Directional fast multipole method for BEM in elastodynamics
cancelled **Schanz, M.; Traub, T.**

TS007-4 **M-HS46**

Computational biomechanics
Chairperson: E. Peña

14:00 4512 Corneal vibration frequencies for intraocular pressure measurement
Ramirez, F.; Borda, G.; Arciniegas, A.; Guzman, A.F.

14:20 4513 Multi-scale finite element analyses and syntheses of 3D scaffold structure for blood vessel tissue regeneration
Uchida, T.; Kuramae, H.; Morita, Y.; Nakamachi, E.

14:40 4514 Optimising bioreactor design for polymer degrading scaffolds
Almeida, S.R.; Almeida, H.A.; Bártolo, P.J.

15:00 4515 Modelling of hydrogel extracellular matrix deformation caused by embedded cells
Doweidar, M.H.; Manzano, S.; Moreno-Loshuertos, R.; Ochoa, I.; Doblaré, M.

15:20 4516 2D phase-field analyses of dendrite and axon growth of nerve cell
Nakagawa, K.; Takaki, T.; Morita, Y.; Nakamachi, E.

TS009-2 **J-HS13**

Computational damage mechanics, dynamic failure and fracture
Chairperson: F. Gruttmann

14:00 4517 Impact mechanics of sandwich panels
Ebrahimi, H.; Hamouda, A.S.; Vaziri, A.

14:20 4518 O(n) algorithm for identification of domain isolation by fracture surfaces
Sumitomo, H.; Oguni, K.

14:40 4519 Computation of stress intensity factors in a modal analysis with X-FEM
Tran, V.; Geniaut, S.; Nistor, I.

15:00 4520 Revealing microstructural parameters influencing strength and toughness of silicon nitride
Taheri Mousavi, S.M.; Molinari, J.; Chambart, M.; Richart, N.; Kok, P.

15:20 4521 Simulation of the dynamic delamination of unidirectional L-shaped laminated composite beams
Gozluklu, B.; Coker, D.

TS012-9 **M-HS21**

Computational fluid mechanics
Chairperson: A. Nastase

14:00 4522 The collocations and least squares method: application to numerical solution of the Navier-Stokes equations
Shapeev, V.P.; Isaev, V.I.

14:20 4523 Three-dimensional numerical simulations of thermocapillary flows in high Prandtl number liquid bridges
Mukin, R.; Kuhlmann, H.C.

14:40 4524 Using of CFD simulations for increasing speed and temperature of flame spray technology
Zabransky, T.; Hamza, J.; Schuster, M.

15:00 4525 CFD calculation of heat transfer and combustion processes in the cooling stack of a converter plant
Contreras Espada, J.; Laaber, P.; Steinparzer, T.; Wackerle, F.; Wimmer, G.

15:20 4526 Darrieus-Landau instability effects on the response of laminar premixed flames to harmonic velocity disturbances
Schlimpert, S.; Meinke, M.; Schröder, W.; Hemchandra, S.

15:40 4527 Large-eddy simulation of deflagration using the conditional moment closure approach
Turquand d'Auzay, C.; Thornber, B.

Thursday, September 13, 2012, 14:00 - 16:00

TS013-2 **M-HS42**

Computational geomechanics
Chairperson: B. Pichler

14:00 4528 Wave in 3-D poroelastic media including gradient effects
Papargyri-Beskou, S.; Beskos, D.; Polyzos, D.

14:20 4529 The algebra of quaternions in non-isothermal poroelastic phenomena
Suarez-Arriaga, M.C.

14:40 4530 Finite element simulation of dynamic pile penetration into a saturated porous medium
Sabetamal, H.; Nazem, M.; Sloan, S.W.; Carter, J.P.

15:00 4531 A multi-material ALE method for vibro-injection pile installation in saturated sand
Aubram, D.; Rackwitz, F.; Savidis, S.A.

15:20 cancelled 4532 Diffuse failure mechanism involved in a vertical breakwater foundation induced by impulsive sea wave actions
Stickle, M.M.; Oteo, C.; de la Fuente, P.

15:40 4533 Modeling erosion at the fluid/soil interface during the hole erosion test
Kissi, B.; Parron Vera, M.A.; Rubio Cintas, M.D.; Khamlichi, A.

TS021-1 **J-SR62**

Computational nanotechnology
Chairperson: M.A. Hartmann

14:00 4534 Drying processes in nanoparticulate layers
Tupy, M.; Pöschel, T.

14:20 4535 Molecular dynamics simulations on the coherency of Cu nano precipitates in bcc-Fe
Molnar, D.; Binkele, P.; Schmauder, S.

14:40 cancelled 4536 Automata based modeling for medical nanorobots
Shojaie, A.; Ehghan Takhtfooladi, M.

15:00 moved to MS107-1 4537 An adaptive eXtended bridging scale method for crack propagation
Pattabhi Ramaiah, B.; Gracie, R.; Rabczuk, T.; Qian, D.; Bordas, S.P.A.

15:20 4538 Mechanical properties of bilayer graphene sheets coupled by sp3 bonding
Zhang, Y.

TS025-10 **J-HS11**

Computational solid and structural mechanics
Chairperson: A. Schröder

14:00 4539 Hybrid finite volume discretization of Biot equations on general meshes
Di Pietro, D.; Eymard, R.; Lemaire, S.

14:20 4540 Identification of static equilibrium points by optimization using the potential energy surface
von Scheven, M.; Spreng, S.; Bischoff, M.

14:40 cancelled 4541 Sensitivity analysis of uncertain factors in hierarchy model validation
Yu, S.; Xu, B.; Liu, X.; Mo, J.

15:00 4542 Shape and topology optimization of mechanical loaded structures using the phase-field method with a new solid-void-interpolation scheme
Selzer, M.; Bäuerle, S.; Boy, F.; Nestler, B.; Schwab, F.

TS026-2 **J-HS16**

Computer simulation of processes and manufacturing
Chairperson: R. Baronas

14:00 4543 Towards the simulation of internal traverse grinding
Holtermann, R.; Schumann, S.; Menzel, A.; Biermann, D.

14:20 4544 Investigation into the predicton of residual stresses in additive layer manufactured parts
Kenward, B.H.; Sienz, J.; Brown, S.; DiazDeLaO, F.A.

14:40 4545 Computer simulation of forming process for composite sandwich sheets
Brigadnov, I.A.

15:00 4546 A multiphysical simulation model for laser assisted manufacturing
Koch, H.; Otto, A.; Gómez Vázquez, R.

15:20 4547 Residual stress simulation of an aero engine disc during heat treatment
Rauer, G.; Kühhorn, A.; Springmann, M.

15:40 4548 myRTM: an approach for the simulation of Resin Transfer Moulding (RTM) processes based on cellular automata
Barandun, G.A.; Henne, M.; Arbter, R.

TS032-1 **M-HS50**

Interdisciplinary methods including CFD
Chairperson: F. Cirak

14:00 4549 Computational study of a hybrid flow control system on a NACA 4415 airfoil
Rojas, A.A.; López, O.D.

14:20 4550 Model-free closed-loop flow control
Atam, E.; Mathelin, L.; Cordier, L.

14:40 4551 A penalty-projection algorithm for incompressible fluid-structure interaction
Bnà, S.; Bornia, G.; Manservisi, S.

15:00 4552 Two-dimensional fluid-structure interaction simulation of airfoil
Nordanger, K.; Kvamsdal, T.; Holdahl, R.; Okstad, K.M.

15:20 4553 Numerical simulation of boundary-layer stabilization using plasma actuators
Vieira, D.G.S.D.R.; Kriegseis, J.; Grundmann, S.; Schäfer, M.

TS041 **J-HS15**

Numerical algorithms for particle methods
Chairperson: E. Oñate

14:00 4554 Simulation of gas flows through open-cell foam structures using a direct simulation Monte Carlo method
Strobl, S.; Montaine, M.; Pöschel, T.

14:20 4555 Aeroacoustic validation of the Lattice Boltzmann method on non-uniform grids
Hasert, M.; Klimach, H.; Bernsdorf, J.; Roller, S.P.

14:40 4556 GPU implementation of the lattice Boltzmann method and virtual flux method
Tanno, I.; Hashimoto, T.; Yasuda, T.; Tanaka, Y.; Morinishi, K.; Satofuka, N.

15:00 4557 Granular flow in rotating drum: the effect of friction parameter in discrete elements
Lo, W.W.; Hsieh, S.P.

15:20 4558 Failure of rockfill dams during overtopping scenarios - a coupled level set-PFEM approach
Larese De Tetto, A.; Rossi, R.; Oñate, E.

TS050-1 **J-HS18**

Uncertainty and stochastic analysis
Chairperson: H. Pradlwarter

14:00 4559 Computational methods for Bayesian estimation and control in reliability and maintenance modeling
Makis, V.; Kim, M.J.; Lin, C.

14:20 4560 Stochastic noise model for FEM-based active noise control estimation
Airaksinen, T.; Toivanen, J.

Thursday, September 13, 2012, 14:00 - 16:00

14:40	4561	Adaptive strategies for moment estimation using stochastic collocation and Kriging based approaches **Chandra Sekhar, D.; Keane, A.J.; Forrester, A.I.J.**
15:00	4562	Mid-frequency vibration analysis of a touch screen with stochastic interfaces **Blanze, C.; Rouch, P.**

16:00 - 16:30

Coffee Break

Thursday, September 13, 2012, 16:30 - 18:30

16:30 - 18:30

MS101-5 **M-HS28**

Computational biomechanics
Chairperson: P. Zysset

16:30 4700 A phase-field approach to fracturing hydrated biological tissue
Markert, B.
16:50 4701 A neuronal-recruited geometrical model of skeletal muscle
Heidlauf, T.; Röhrle, O.
17:10 4702 Modeling of dynamic perfusion test using a two-scale model of tissue parenchyma with layer-wise decomposition
Rohan, E.; Lukes, V.; Jonasova, A.
17:30 4703 Computational analysis on the mechanical interaction between a thrombus and red blood cells
Kamada, H.; Imai, Y.; Nakamura, M.; Ishikawa, T.; Yamaguchi, T.

MS111-3 **M-Elise Richter**

Toward multiscale and adaptive PUM for fracture and heterogeneous media
Chairperson: O. Allix

16:30 4704 Ductile dynamic fracture modeling using embedded strong discontinuities in CGI machining simulations
Larsson, R.; Ljustina, G.; Fagerström, M.
16:50 4705 Pitfalls in atomistic to continuum coupling simulations
Fackeldey, K.

MS113-3 **J-UG22**

Numerical simulation of microstructures
Chairperson: S. Forest

16:30 4706 Influence of texture on the effective response of multiphase steels
Yadegari, S.; Turteltaub, S.R.; Suiker, A.S.J.; Kok, P.
16:50 4707 Solid-state sintering simulation: surface, volume and grain boundary diffusions
Pino Muñoz, D.; Bruchon, J.; Drapier, S.; Valdivieso, F.
17:10 4708 A FEM simulation of mechanical behavior of materials from ab-initio
Fau, A.; Aubry, D.
17:30 4709 Treatment of simultaneous deformation and solid-state precipitation in thermo-kinetic calculations
Sherstnev, P.; Kozeschnik, E.
17:50 4710 On the role of interface dissipation in MEMS resonators
Frangi, A.; Jaakkola, A.; Pensala, T.

MS116-1 **M-HS16**

Coupling of different numerical methods
Chairperson: C. Dünser

16:30 4711 Nonlinear analysis by an adaptive BEM-FEM coupling technique
Pereira, A.; Dünser, C.; Beer, G.; Noronha, M.
16:50 4712 Simulation of sequential tunnel excavation with the boundary element tearing and interconnecting method
Lindner, B.; Dünser, C.; Beer, G.
17:10 4713 Non-symmetric BEM-FEM tearing and interconnecting method
Rodríguez-Tembleque, L.; González, J.A.; Abascal, R.; Park, K.
17:30 4714 Numerical simulation of piled rafts on an infinite domain
Ribeiro, D.B.; Paiva, J.B.
17:50 4715 Applications of FEM/BEM coupling on heterogeneous structures using domain decomposition
Savula, Y.; Dyyak, I.; Makar, I.; Styahar, A.

MS118-2 **M-HS23**

Image based modeling of heterogeneous materials
Chairperson: G. Laschet

16:30 4716 Computational analysis of microstructures of dual-phase steels obtained from three-dimensional EBSD/FIB data
Brands, D.; Balzani, D.; Scheunemann, L.; Schröder, J.; Raabe, D.
16:50 4717 3D image filtering and segmentation using morphological tools
Debayle, J.; Pinoli, J.
17:10 4718 Crystal plasticity finite element simulation using experimental microstructures imaged by X-ray tomography
Li, J.; Proudhon, H.; Forest, S.; Roos, A.
17:30 4719 3D-RVE modeling and multiscale analysis of polycrystal piezoelectric material based on EBSD measurement
Kuramae, H.; Sakamoto, H.; Uetsuji, Y.
17:50 4720 Measurement and modeling of the micromechanics of the internal bond in wood plastic composites
Muszynski, L.; Schwarzkopf, M.; Nairn, J.A.; Lin, X.

MS127-1 **J-HS14**

Modeling of phase-transformation-related mechanical phenomena at different length scales
Chairperson: T. Antretter

16:30 4721 A multi-scale model for the interaction of phase-transformations and plasticity in polycrystalline solids
Ostwald, R.; Bartel, T.; Menzel, A.
16:50 4722 A macro scale constitutive model for TRIP steel
Geijselaers, H.; Perdahcioglu, S.; van den Boogaard, A.H.
17:10 4723 Macro modelling for multi-phase transformations at large strains
Mahnken, R.; Schneidt, A.; Wolff, M.
17:30 4724 Modelling of creep and TRIP during heating and austenitisation
Bökenheide, S.; Montalvo-Urquizo, J.; Wolff, M.
17:50 4725 A constitutive model for analyzing the strain induced martensitic transformation (SIMT) in metastable Austenitic stainless steel at different strain rates
Uppaluri, N.S.R.
18:10 4726 A finite element unit cell model describing transformation induced plasticity on the example of a maraging steel
Hasenhütl, E.; Fischlschweiger, M.; Antretter, T.

MS202-2 **M-HS41**

Modelling of medium to dense gas-particle flows - Discrete element methods
Chairperson: C. Kloss

16:30 4727 Simulation of hot mix asphalt mixer using droplet based coating model and DEM
Hobbs, A.
16:50 4728 Numerical simulation and experimental validation of granular charging
Seil, P.; Ortega Gomez, J.; Pirker, S.; Kloss, C.
17:10 4729 Approximation of objects by spheres for multisphere simulations in DEM
Amberger, S.; Friedl, M.; Goniva, C.; Pirker, S.; Kloss, C.
17:30 4730 Computational rheology of core-shooting materials
Uhlig, F.; Schwarze, R.; Luding, S.

Thursday, September 13, 2012, 16:30 - 18:30

MS206-1 **M-HS31**

Unstructured high-order methods for computational fluid dynamics
Chairperson: P.E. Vincent

16:30 4731 Recent developments in the flux reconstruction method and extensions to large eddy simulation **(Keynote Lecture)**
Jameson, A.; Lodato, G., Vincent, P.E.

17:00 4732 Efficient implicit time integration for DG discretizations of unsteady 3D compressible flows **(Keynote Lecture)**
Birken, P.; Haas, M.; Munz, C.

17:30 4733 A generalized matrix-based procedure for identifying energy stable flux reconstruction schemes
Vincent, P.E.; Jameson, A.

17:50 4734 An analysis of the performance of a high-order stabilised finite element method for simulating compressible flows
Sevilla, R.; Hassan, O.; Morgan, K.

18:10 4735 A generic moment limiter for high-order discontinuous Galerkin methods
Renac, F.

MS301-3 **J-SR64**

High-order methods for hyperbolic problems
Chairperson: S. Noelle

16:30 4736 High-order accuracy, entropy stability and convergence for finite difference methods for hyperbolic conservation laws
Fjordholm, U.S.; Mishra, S.; Tadmor, E.

16:50 4737 A class of energy preserving discontinuous Galerkin methods for the Vlasov-Poisson system
Ayuso de Dios, B.; Hajian, S.

17:10 4738 High order accurate entropy stable schemes for systems of conservation laws on unstructured grids
Madrane, A.; Fjordholm, U.S.; Mishra, S.; Tadmor, E.

17:30 4739 Numerical modeling of electromagnetic wave propagation in dispersive media by a high order DGTD method
Klemm, M.; Lanteri, S.; Scheid, C.

17:50 4740 Entropy-stable discontinuous Galerkin finite element method with streamline diffusion and shock-capturing
Hiltebrand, A.; Mishra, S.

MS303-3 **J-HS17**

Innovative methods for fluid structure interaction
Chairperson: T. Kvamsdal

16:30 4741 Numerical efficiency and robustness of partitioned approaches for fluid-structure interaction
Schäfer, M.; Sachs, S.; Türk, S.; Sternel, D.

16:50 4742 A second order accurate staggered scheme for fluid-structure interaction
Dettmer, W.G.; Peric, D.

17:10 4743 Modeling of silo discharge as strongly-coupled fluid-structure-system
Reinstädler, S.; Dinkler, D.

17:30 4744 Interaction of flexible multibody dynamics with fluids by means of smoothed particle hydrodynamics
Gerstmayr, J.; Gruber, P.G.

17:50 4745 Numerical simulation of fluid-particle interaction problems: aggregation dynamics of adhesive particles in particulate flows
Avci, B.; Wriggers, P.

18:10 4746 Advances in ALE based fluid-structure interaction modeling for offshore engineering applications
Jaiman, R.K.

MS304-2 **J-UG21**

Highly efficient numerical methods in finance
Chairperson: C. Vazquez

16:30 4747 Pricing American options using the stochastic grid method
Jain, S.; Oosterlee, K.

16:50 4748 A new drift-free simulation algorithm for LIBOR market model
Fernández, J.L.; Pou, M.; Rodríguez-Nogueiras, M.; Vazquez, C.

17:10 4749 Name concentration and the wavelet approximation method
Masdemont, J.J.; Ortiz-Gracia, L.

17:30 4750 An efficient implementation of simulating annealing in GPUs and its application to pricing and calibration of SABR stochastic volatility model
Ferreiro, A.M.; García, J.A.; López-Salas, J.G.; Vazquez, C.

MS603-2 **J-SR53**

Modeling of fiber-based structures (textiles and textile reinforced composites)
Chairperson: N. Hamila

16:30 4751 Computational mechanics of knitted structures – critical overview
Kyosev, Y.K.; Renkens, W.

16:50 4752 Homogenization and modelling of technical textiles
Fillep, S.; Mergheim, J.; Steinmann, P.

17:10 4753 Multi-layered textile composites - a shell element based homogenization approach
Gager, J.; Pettermann, H.E.

17:30 4754 Drape simulation for non-developable multi-layered CFRP structures focusing on optimized cutting patterns
Widhammer, A.M.; Wüchner, R.; Bletzinger, K.

17:50 4755 Numerical draping simulations of textile composite reinforcements
Gereke, T.; Döbrich, O.; Hübner, M.; Diestel, O.; Krzywinski, S.; Cherif, C.

MS604-1 **J-HS12**

Time integration methods for quasi-statical and dynamical processes
Chairperson: S. Hartmann

16:30 4756 Time-adaptive analysis of coupled problems for FAST-processes
Rothe, S.; Hartmann, S.; Frage, N.

16:50 4757 Dynamic finite deformation thermo-viscoelasticity using energy-consistent time-integration
Krüger, M.; Groß, M.M.; Betsch, P.

17:10 4758 Structure-preserving time integrators for thermo-elasticity with heat conduction
Mata, P.L.; Lew, A.J.

17:30 4759 A new temporal integration scheme for dynamic adhesion problems
Gautam, S.S.; Sauer, R.A.

17:50 4760 Residual based error estimates for p-Galerkin time integration schemes
Kuhl, D.; Carstens, S.; Gleim, T.

Thursday, September 13, 2012, 16:30 - 18:30

MS608-2 **M-HS32**

Reduced basis, POD and PGD model reduction techniques
Chairpersons: A. Huerta; E. Cueto

16:30 4761 Toward a separated representation of solutions involving discontinuities
Poulhaon, F.; Leygue, A.; Chinesta, F.

16:50 4762 Coupling asymptotic numerical method and proper generalized decomposition to solve non-linear transient problems
Nguyen, T.L.; Beringhier, M.; Leygue, A.; Grandidier, J.; Chinesta, F.

17:10 4763 Tensor approximation methods for image-based computations
Giraldi, L.; Nouy, A.; Legrain, G.; Cartraud, P.; Takano, N.

17:30 4764 Off-line solutions of non-linear models in the context of on-line controllers
Ghnatios, C.; Aguado, J.V.; Leygue, A.; Chinesta, F.

17:50 4765 A PGD-ANM-based approach for fast solving nonlinear equations
Verdon, N.; Joyot, P.; Chinesta, F.; Villon, P.

18:10 4766 Adaptive mesh refinement technique for the proper generalized decomposition – application to a strongly coupled thermoviscoelastic problem
Nguyen, T.L.; Beringhier, M.; Grandidier, J.

MS615-4 **J-SR63**

Advanced beam models
Chairperson: Z. Dimitrovová

16:30 4767 Plain- and reinforced-concrete planar beam finite elements with embedded transversal cracking
Jelenic, G.; Sculac, P.; Skec, L.

16:50 4768 Modeling and analysis of the Camus I RC shear wall
Mulas, M.G.; Martinelli, L.; Martinelli, P.

17:10 4769 Lateral impact of tubular structure – theoretical and experimental analysis
Kotelko, M.

MS620-4 **M-HS47**

Waves and computation
Chairperson: G. Seriani

16:30 4770 On the accuracy of high-order absorbing boundary conditions and perfectly matched layers in the time domain
Lancioni, G.; Lenci, S.

16:50 4771 High-order absorbing boundary conditions for a thermo-acoustic problem
Shevchenko, I.; Wohlmuth, B.I.

17:10 4772 Local absorbing boundary condition for one-dimensional Schrödinger equation
Bian, L.; Tang, S.

17:30 4773 Numerical investigations on negative refraction and focusing of ultrasonic Lamb waves by a thickness change in an isotropic plate
Schubert, F.

MS625-3 **M-HS34**

High order fictitious domain methods: basic principles and engineering applications
Chairperson: A. Düster

16:30 4774 A sub mesh penalty projection method for incompressible flow on unstructured meshes
Etcheverlepo, A.; Vincent, S.; Caltagirone, J.; Monfort, D.

16:50 4775 An optimal control approach for the computation of fluid particle flows
Fabrèges, B.; Gouarin, L.; Maury, B.

MS637-1 **J-SR10**

Error estimation and adaptive mesh generation
Chairperson: K.G. van der Zee

16:30 4776 Goal-oriented mesh adaptation for vortex shedding flows **(Keynote Lecture)**
Dervieux, A.; Belme, A.; Alcin, H.; Alauzet, F.

17:00 4777 PDE-constrained parabolic control problems with stochastic coefficients: space-time adaptive wavelet methods **(Keynote Lecture)**
Kunoth, A.

17:30 4778 Multiscale anisotropic mesh adaptation for a third-order accurate approximation of Euler flow
Mbinky, E.; Dervieux, A.; Alauzet, F.

17:50 4779 L^2-projection and quasi-optimality in the spatial discretization of the heat equation
Tantardini, F.; Veeser, A.

18:10 4780 A Zienkiewicz-Zhu-like error estimator driving anisotropic mesh adaptation in 2D and 3D
Micheletti, S.; Perotto, S.

MS657-2 **J-SR20**

Fast boundary element methods: analysis, numerics and applications
Chairperson: A. Frangi

16:30 4781 Restriction matrices for exploiting symmetry in 3D wave propagation analysis by Energetic BEM
Aimi, A.; Diligenti, M.; Frangi, A.; Guardasoni, C.

16:50 4782 Exact evaluation of singular and near-singular integrals in Galerkin BEM
Lenoir, M.; Salles, N.

17:10 4783 Existence of H-matrix approximants to the inverse of BEM matrices
Faustmann, M.; Melenk, J.M.; Praetorius, D.

17:30 4784 Convergence of adaptive FEM-BEM coupling driven by residual-based error estimators
Aurada, M.; Feischl, M.; Führer, T.; Karkulik, M.; Melenk, J.M.; Praetorius, D.

17:50 4785 Quasi-optimal convergence rates for some adaptive boundary element method in 2D and 3D
Feischl, M.; Karkulik, M.; Melenk, J.M.; Praetorius, D.

18:10 4786 Multi-trace boundary integral formulation of the first kind for wave scattering by composite structures
Claeys, X.; Hiptmair, R.

TS001 **M-HS30**

Artificial intelligence and expert systems
Chairperson: S. Jakubek

16:30 4787 ANN-based clinical decision support system for treatment planning of maxillary implant-supported prosthesis
Jafari, F.; Mohammadi-Amin, M.; Sedighpour, L.; Taheri, A.

16:50 4788 A hybrid genetic algorithm for the multi-mode resource-constrained project scheduling
Magalhaes-Mendes, J.

17:10 4789 Recurrent cascade neural networks in identification problems of structural mechanics
Waszczyszyn, Z.; Kłos, M.; Piątkowski, G.

17:30 4790 cancelled Artificial neural networks in parameter identification
Mares, T.; Janouchova, E.; Kucerova, A.

17:50 4791 Utilization of neural networks for simulating vehicle induced air velocity in underground tunnels
Koç, G.; Albayrak, K.; Sert, C.

18:10 4792 Multi-disciplinary conceptual design of multi-stage hybrid rocket using genetic algorithm and data mining technique
Kanazaki, M.; Kitagawa, Y.; Kitagawa, K.; Nakamiya, M.; Shimada, T.

Thursday, September 13, 2012, 16:30 - 18:30

TS007-5 **M-HS46**

Computational biomechanics
Chairperson: P. Pivonka

16:30 4793 A quasi brittle damage assesment simulation model of cortical bone specimens under compressive load
Bettamer, A.; Hambli, R.; Allaoui, S.; Barkaoui, A.

16:50 4794 Three-point bending and nanoindentation test of cortical bone - experiment and numerical simulation
Kokot, G.; Binkowski, M.; John, A.

17:10 4795 A nonlinear finite element model validation study for the human femur
Dall'Ara, E.; Luisier, B.; Pretterklieber, M.; Kainberger, F.; Zysset, P.; Pahr, D.H.

17:30 4796 Using subject-specific bones and implant geometry improves the accuracy in estimating the joint contact forces at the knee medial and lateral condyles
Gerus, P.; Lloyd, D.; Sartori, M.; Fregly, B.J.; Besier, T.; Delp,S.; Banks, S.A.; Pandy, M.; D'Lima, D.D.

17:50 4797 Numerical modeling of osteoporotical changes in human bones
John, A.; Wysota, P.

TS009-3 **J-HS13**

Computational damage mechanics, dynamic failure and fracture
Chairperson: H. Minnebo

16:30 4798 Probabilistic analysis of multiparticle interactions in random structures, micro- and macrofailure of unidirectional fibre-reinforced composites
Zaitsev, A.V.; Kislitsin, A.V.; Koksharov, V.S.

16:50 4799 Simulation of low speed impact on composite material structures - an application on non-local damage model
Delsemme, J.; Bruyneel, M.; Jetteur, P.

17:10 4800 X-FEM assisted simulation of ductile damage induced 2D crack propagation
Crété, J.; Longere, P.; Cadou, J.

17:30 4801 Simulation of specimen-geometry effect on ceramics strength by randomly distributed damage approach
Hoshide, T.; Sugiyama, H.

TS013-3 **M-HS42**

Computational geomechanics
Chairperson: H.B. Muhlhaus

16:30 4802 A study about the influence of height on slope stability using limit equilibrium methods and evolutionary computation
Greiner, D.; Chirino, F.; Emperador, J.M.; Galván, B.; Winter, G.

16:50 4803 Effect of grain roughness on strength, volume changes, elastic and dissipated energies during quasi-static triaxial and biaxial compression using DEM
Tejchman, J.; Kozicki, J.

17:10 4804 Numerical recipes for equivalent continuum modeling of jointed systems
Vorobiev, O.; Herbold, E.

17:30 4805 Dyke-type fracture behaviour in a sedimentary caprock associated with CO2 injection
Karnaeva, E.; Leguillon, D.; Baroni, A.; Putot, C.

TS020 **J-HS15**

Computational microtribology and micromechanics
Chairperson: P. Wriggers

16:30 4806 Multipoint approximations of stochastic elastic boundary value problem for polydisperse composites
Tashkinov, M.; Mikhailova, N.

16:50 4807 Elasto-hydrodynamic lubrication of rough contacts: on a rigorous generalisation of the homogenisation approach
Scheichl, B.F.; Guerrieri Paleotti, F.S.

17:10 4808 Data filtering for non-direct evaluation of adhesive properties of materials
Borodich, F.M.; Galanov, B.A.; Gorb, S.N.; Prostov, M.; Prostov, Y.I.

17:30 4809 Numerical simulation prediction for the elastic behavior of concrete taking into account its mesoscopic structure
Sassine, R.

TS021-2 **J-SR62**

Computational nanotechnology
Chairperson: Y. Zhang

16:30 4810 Numerical study of microchannel heat sink performance using nanofluids
Yang, Y.; Lin, S.; Lai, F.; Yang, Y.

16:50 4811 Finite element analysis of cracked nano-fiber reinforced composite
Ahmed, W.K.; Al-Douri, Y.; Aslantas, K.

17:10 4812 Calculation of theoretical shear strength of metals and covalent crystals based on ab initio and empirical atomistic models
Umeno, Y.; Shiihara, Y.; Iskandarov, A.M.; Dmitriev, S.V.

TS026-3 **J-HS16**

Computer simulation of processes and manufacturing
Chairperson: P.S. Dineva

16:30 4813 Numerical flow simulations used in production/technological problems
Adamek, K.; Kolar, J.

16:50 4814 Effects of diffusion limitations on the response of biosensors utilizing parallel substrates conversion
Ašeris, V.; Baronas, R.; Kulys, J.

17:10 4815 Computational modeling of self-organization in a liquid phase bacterial bioluminescent biosensor
Baronas, R.; Ledas, Ž.; Šimkus, R.

17:30 4816 Systematic-validation of a computer-simulation-environment for modeling and dynamic-behavior-analysis of complex mechatronic mobile robot's systems
Bauer, J.M.; Riepl, D.; Garayalde, D.; Laguyás, H.

TS032-2 **M-HS50**

Interdisciplinary methods including CFD
Chairperson: L. Gaul

16:30 4817 Comparative study of wind effects on tall buildings using international codes and CFD
Parv, B.; Hulea, R.; Zoicas, R.

16:50 4818 A combined MRT Lattice-Boltzmann and phase-field method for fluid flow and heat transfer simulations in cellular solids
Ettrich, J.; Nestler, B.; Rölle, M.

17:10 4819 CFD analysis of the drying process of coal blend during coal coking process
Bulinski, Z.; Slupik, L.; Nowak, A.J.

17:30 4820 Artificial intelligence enhancing a CFD snow deposition approach for the use in infrastructure management, maintenance and virtual reality
Toplak, W.; Trenker, M.

Thursday, September 13, 2012, 16:30 - 18:30

TS050-2 **J-HS18**

Uncertainty and stochastic analysis
Chairperson: C. Soize

16:30 4821 A methodological perspective on computational engineering design under uncertainty
Padulo, M.; Guenov, M.

16:50 4822 Optimization of interval analysis of a bridge under a moving vehicle with bounded system parameters based on particle swarm optimization algorithm
Liu, N.; Gao, W.; Song, C.

17:10 4823 Construction of D-optimal design of experiments for polynomial chaos expansion
Zein, S.; Colson, B.

TS062-1 **M-HS07**

General topics
Chairperson: C. Hellmich

16:30 4824 A comprehensive image processing methodology for automatically detecting shield tunnel defects
Ai, Q.; Yuan, Y.

16:50 4825 Game theory based modeling for computational transaction cost economics
Shojaie, A.; Nasooti, S.

17:10 4826 Zaidenberg's learning model for the evolution of altruistically cooperative behavior
Zaidenberg, N.J.

17:30 4827 Control of a solar cell manipulator with flexible links in vacuum circumstance
Kim, W.H.; Park, T.W.; Park, D.I.

17:50 4828 Simulations of microstructure, temperature and stress in wave soldering
Mizui, T.; Takaki, T.

18:10 4829 Microscopic model for simulation of traffic flows on multilane highways and crossroads
Churbanova, N.; Furmanov, I.; Trapeznikova, M.

Friday, September 14, 2012, 08:00 - 09:20

08:00 - 09:20

MS110-1 **J-SR53**

Applications and developments of fiber reinforced composite structures with a focus on the aerospace industry
Chairperson: M. Fleischmann

08:00 5100 Numerical model of a cylinder pin reinforced metal to composite single-lap shear joint
Ucsnik, S.; Staffenberger, T.

08:20 5101 Comparison of tetrahedral and voxel meshing technique for unit cell calculations of braided composites
Cichosz, J.; Kozak, F.; Hinterhölzl, R.; Drechsler, K.

08:40 5102 Local failure simulation in composites using the example of printed circuit boards
Fuchs, P.F.; Pinter, G.

09:00 5103 Multiscale analysis of aeronautical composite structures using high fidelity generalized method of cells
Ivančević, D.; Smojver, I.

MS116-2 **M-HS16**

Coupling of different numerical methods
Chairperson: A. Pereira

08:00 5104 Soil-structure interaction: Riemann Solver and the modified Godunov method for irreversibly three-phase porous compressible media
Feldgun, V.; Karinski, Y.; Yankelevsky, D.

08:20 5105 Accounting for nonlinear behavior in a Laplace transform BE-FE coupled approach
Nieto Ferro, A.; Clouteau, D.; Greffet, N.; Devésa, G.

08:40 5106 On the H1 discrete - continuum coupling based on the Arlequin method (DEM-CNEM)
Jebahi, M.; Charles, J.; Dau, F.; Illoul, L.; Iordanoff, I.

09:00 5107 On the modeling of a transient heat generation problem with a boundary element formulation and a time independent fundamental solution
Pettres, R.; Lacerda, L.A.; Carrer, J.A.M.

MS118-3 **M-HS23**

Image based modeling of heterogeneous materials
Chairperson: G. Laschet

08:00 5108 Morphology analysis of human vertebral trabecular bone under static and dynamic loading
Takano, N.; Nakano, T.; Ishimoto, T.

08:20 5109 Micro-CT based homogenization of the elastic properties of cortical bone: influence of the heterogeneous distribution of mineral and porosity
Sansalone, V.; Bousson, V.; Naili, S.; Bergot, C.; Peyrin, F.; Laredo, J.; Haiat, G.

08:40 5110 CraFT: a versatile code based on Fourier transforms to investigate the response of heterogeneous materials with complex microstructure
Moulinec, H.; Silva, F.; Suquet, P.

09:00 5111 FFT-based finite element method for homogenization
Vondřejc, J.; Zeman, J.; Marek, I.

MS206-2 **M-HS31**

Unstructured high-order methods for computational fluid dynamics
Chairperson: P.E. Vincent

08:00 5112 An adaptive discretization for the compressible Navier-Stokes equations using hybridization
Woopen, M.; Balan, A.; Schütz, J.; May, G.

08:20 5113 Discontinuous Galerkin computation of compressible and incompressible flows in safety relief valves
Bassi, F.; Crivellini, A.; Dossena, V.; Franchina, N.; Savini, M.

08:40 5114 An efficient algorithm for parallel k-exact finite volume reconstruction on unstructured grids
Haider, F.; Brenner, P.; Courbet, B.; Croisille, J.

09:00 5115 Investigation of high order flux reconstruction methods for different kinds of flow problems
Lu, Y.; Liu, K.; Yuan, X.; Dawes, W.N.

MS303-4 **J-HS17**

Innovative methods for fluid structure interaction
Chairperson: H. van Brummelen

08:00 5116 On the loosely coupled time-marching for incompressible fluid-structure interaction **(Keynote Lecture)**
Fernández, M.A.

08:30 5118 Improved partitioned algorithms for the solution of fluid-structure interaction problems in haemodynamics **(Keynote Lecture)**
Pozzoli, M.; Nobile, F.; Vergara, C.

09:00 5117 Goal-oriented error estimation for fluid-structure interactions
Richter, T.

MS601-1 **J-UG21**

New product development by the synthesis of computational and experimental methods
Chairperson: G. Hofstetter

08:00 5119 Development of a drivable cover element for a slab track system
Andreatta, A.; Theiner, Y.; Feix, J.; Hofstetter, G.

08:20 5120 Computational modeling of high speed RTM of automotive part involving on-line mixing of highly reactive two-component resin system
Binetruy, C.; Deleglise, M.; Comas-Cardona, S.; Advani, S.G.

08:40 5121 Nonlinear analysis of anchoring systems in concrete within the development of innovative fastening products
Winkler, B.; Li, Y.

09:00 5122 Development and optimization of an innovative joining technique for composite structures using the finite element method
Lang, H.; Nogueira, A.C.; Drechsler, K.; Hombergsmeier, E.

MS604-2 **J-HS12**

Time integration methods for quasi-statical and dynamical processes
Chairperson: D. Kuhl

08:00 5123 p-Version finite elements combined with high-order time-integration algorithms
Hartmann, S.; Netz, T.

08:20 5124 Runge-Kutta methods for time integration in computational inelasticity - how to go beyond order 2
Eidel, B.

08:40 5125 A note on relationship between fixed-pole and moving-pole approaches in static and dynamic analysis of non-linear spatial beam structures
Jelenic, G.; Gacesa, M.; Saje, M.

Friday, September 14, 2012, 08:00 - 09:20

MS608-3 **M-HS32**

Reduced basis, POD and PGD model reduction techniques
Chairpersons: F. Chinesta; A. Gravouil

08:00 5126 Towards a reduced order modeling approach for efficient structural shape optimization
Raghavan, B.; Breitkopf, P.; Villon, P.

08:20 5127 Online training of data-driven POD-based surrogates for optimization
Guénot, M.; Lepot, I.; Sainvitu, C.; Filomeno Coelho, R.; Beauthier, C.

08:40 5128 A comparison of different time integration schemes for the space-time Proper Generalized Decomposition (PGD) of transient elastodynamics problems
Boucinha, L.; Gravouil, A.; Ammar, A.

09:00 5129 Multiparametric response surface construction by means of proper generalized decomposition
El Halabi, F.; Gonzalez, D.; Doblaré, M.

MS624-1 **M-HS28**

Computational mechanics of biological tissues
Chairperson: E. Budyn

08:00 5130 Local mechanical properties of pathological bones determined by inverse analysis
Imbert, L.; Bérot, M.; Avril, S.; Aurégan, J.; Hoc, T.

08:20 5131 Bone resorption within a cortical basic multicellular unit: a computational approach
Jeon, J.; Buenzli, P.R.; Pivonka, P.; Smith, D.W.; Cummings, P.T.

08:40 5132 High-resolution 3D finite-element model of the temporo-mandibular joint discs during jaw closing
Savoldelli, C.; Bouchard, P.; Tillier, Y.

09:00 5133 Bayesian analysis of tumor growth models under uncertainty
Daarud, A.H; Oden, J.T; Prudencio, E.E.

MS631-1 **M-HS30**

Optimization methods in imaging and learning: From continuous to discrete and reverse
Chairpersons: N. Thorstensen; O. Scherzer

08:00 5135 Tight relaxations of combinatorial problems as nonlinear eigenproblems
Hein, M.

08:20 5136 Computational aspects of statistical multiresolution methods in bio-imaging
Frick, K.

08:40 5134 Total variation denoising on hexagonal grids
Kirisits, C.

MS637-2 **J-SR10**

Error estimation and adaptive mesh generation
Chairperson: S. Prudhomme

08:00 5137 Goal-oriented adaptivity for controlled-source electromagnetic marine exploration
Ovall, J.S.

08:20 5138 Anisotropic goal-oriented estimate for a third-order accurate Euler model
Carabias, A.; Belme, A.; Alauzet, F.; Koobus, B.; Dervieux, A.

08:40 5139 Convergence of goal-oriented error estimates
van der Zee, K.G.; Dede, L.; Prudhomme, S.

09:00 5140 Hierarchical a posteriori error estimators for the mimetic discretization of elliptic problems
Antonietti, P.F.; Beirao da Veiga, L.; Lovadina, C.; Verani, M.

09:20 5439 NEW A multi-mesh adaptive scheme for air quality modeling with the finite element method
Monforte, L.; Pérez-Foguet, A.

MS652 **M-HS41**

Unsaturated porous solids and structures
Chairperson: B. Pichler

08:00 5141 Effective flow surface of a bi-porous material: constitutive modeling and numerical simulations
Vincent, P.; Monerie, Y.; Suquet, P.; Moulinec, H.

08:20 5142 Modeling of strengthening concrete structures by concrete overlays
Aschaber, M.; Theiner, Y.; Hofstetter, G.

08:40 5143 Damage of partially saturated sedimentary rock during drying
Pichler, B.; Dormieux, L.; Cariou, S.

09:00 5144 Modelling of concrete degradation due to alkali - silica reaction in variable hygro-thermal conditions
Gawin, D.; Grymin, W.; Pesavento, F.; Schrefler, B.; Simoni, L.

MS653-1 **J-SR62**

Scattering problems for quantum, electromagnetic, and acoustic waveguides
Chairperson: T. Tuovinen

08:00 5145 Causality, apparent “superluminality,” and reshaping in wavepacket propagation
Sokolovski, D.

08:20 5146 Asymptotic theory of electron flow spin-polarization in quantum waveguides of variable cross-section in presence of magnetic field
Baskin, L.M.; Neittaanmäki, P.; Sarafanov, O.

08:40 5147 Comparison of asymptotic and numerical studies of electron flow spin-polarization in quantum waveguide in magnetic field
Kabardov, M.; Neittaanmäki, P.

09:00 5148 A method for computing waveguide scattering matrices in the presence of point spectrum
Plamenevskii, B.A.; Sarafanov, O.

MS662-1 **M-Elise Richter**

Robust multilevel and multiscale methods
Chairperson: S. Margenov

08:00 5149 On the robustness of multilevel preconditioners for quadratic FE discretizations of anisotropic elliptic problems
Kraus, J.K.; Lymbery, M.; Margenov, S.

08:20 5150 On the preconditioning of elliptic problems discretized by a class of discontinuous Galerkin methods
Georgiev, I.G; Kraus, J.K.; Margenov, S.

08:40 5151 Large scale micro finite element analysis of 3D poroelasticity
Arbenz, P.; Flaig, C.; Turan, E.

09:00 5152 Multigrid methods for isogeometric discretization
Gahalaut, K.P.S.; Kraus, J.K.; Tomar, S.

TS007-6 **M-HS46**

Computational biomechanics
Chairperson: D.H. Pahr

08:00 5153 Inter-individual variability of bone density and morphology distribution in the proximal femur and vertebrae
Hazrati Marangalou, J.; van Rietbergen, B.; Ito, K.

08:20 cancelled 5154 Multi-scale modeling of human trabecular bone using Cosserat size effect number (CS)
Ramézani, H.; El-Hraiech, A.; Jeong, J.

08:40 5155 3D-NURBS generation for patient-specific FEA on metacarpus bone
Espinosa, G.; Ramirez, F.

09:00 5156 Mechanobiological model for the simulation of bone mineralization density distribution (BMDD)
Santos, L.; Fernandes, P.R.; Rodrigues, H.; Fonseca, J.E.

Friday, September 14, 2012, 08:00 - 09:20

TS011-1 **J-SR64**

Computational environmental science
Chairperson: A. Soldati

08:00 5157 Multi-objective optimization for an air pollution problem
Alvarez-Vazquez, L.J.; Garcia-Chan, N.; Martinez, A.; Vazquez-Mendez, M.E.

08:20 5158 Finite volume schemes for shallow water river flood flows with real data and sensitivity analysis
Couderc, F.; Madec, R.; Monnier, J.; Vila, J.; Dartus, D.

08:40 cancelled 5159 Pollutants transport simulation in atmospheric boundary layer using an upwind function in stabilized finite element formulations
Albani, R.; Cruz, A.B.G.; Duda, F.; Pimentel, L.; Carmo, E.

08:40 NEW 5461 A three fields finite elements solver and variational data assimilation for viscoplastic free surface flows - application to glacier flow
Martin, N.; Monnier, J.

09:00 NEW 5459 Application of a multiscale turbulence prediction system for aviation safety and wind turbine siting
Rasheed, A.; Sørli, K.; Kvamsdal, T.

TS022-1 **M-HS47**

Computational NDE and wave propagation
Chairperson: D. Givoli

08:00 5160 Frequency response signature of highly heterogeneous materials
Ionita, A.; Kober, E.M.; Dattelbaum, D.M.

08:20 5161 Simulations of ultrasound propagation in intact and defective pharmaceutical tablets
Simonaho, S.; Huttunen, T.; Ketolainen, J.

08:40 5162 Inverse scattering of guided waves for shape reconstruction of plate thinning
Wang, B.; Hirose, S.; Saitoh, T.; Nakahata, K.

TS024-1 **J-HS15**

Computational polymers and polymer composites
Chairperson: H.E. Pettermann

08:00 5163 A new material model for cellular rubber considering stress softening phenomena
Juhre, D.; Raghunath, R.

08:20 5164 A finite strain thermo-chemo-mechanical coupled formulation for filled rubber
Nguyen Van, T.A.; Lejeunes, S.; Eyheramendy, D.; Boukamel, A.

TS032-3 **M-HS50**

Interdisciplinary methods including CFD
Chairperson: A.J. Nowak

08:00 5165 Simulation of the dynamics of internal combustion engines considering oil film lubricated contacts
Offner, G.

08:20 5166 Adsorption modeling in a honeycomb adsorber with the use of SLD adsorption model and 3D boundary element flow solver
Stimec, T.; Hribersek, M.; Basic, S.; Ravnik, J.

08:40 5167 Investigation of heat-transfer characteristics for plate-fin heat sink
Chen, H.; Haung, L.; Lai, S.

09:00 5168 The interaction of the lubrication gap with the sealing ring
Kotesovec, B.; Meyer, G.; Steinrück, H.

TS062-2 **M-HS07**

CAD, CAM and CAE
Chairperson: H.A. Mang

08:00 5169 Applying CAD/CAE tools in the roll center determination for a double A automotive suspension
Andrade, G.O.; Nunes, M.A.A.; Silva, R.

08:20 cancelled 5170 Conquer the terabyte scale: post-processing of high resolution unsteady CFD data for turbomachinery analysis
Voigt, C.; Kügeler, E.; Wellner, J.; Morsbach, C.

08:40 5171 Automated geometry modification and structural analysis process for 2D and 3D models
Otto, D.

09:00 5172 A study on applying 3D reconstruction to mannequin morphing
Hsiao, S.

09:20 - 09:50

Coffee Break

Friday, September 14, 2012, 09:50 - 11:10

09:50 - 11:10

MS110-2 **J-SR53**

Applications and developments of fiber reinforced composite structures with a focus on the aerospace industry
Chairperson: M. Wolfahrt

09:50 5400 An approach for investigating the complexity of an automated draping process using the finite-element method
Liebau, D.F.; van Campen, J.; Sommer-Dittrich, T.; Dölle, N.; Middendorf, P.

10:10 5401 Simulation of materials behavior during in-situ consolidation using continuous welding processes like thermoplastic tape placement
Schledjewski, R.; Khan, M.A.; Mitschang, P.

10:30 5402 A two-step solution procedure for composite structures optimization including design rules and ply continuity constraints
Bruyneel, M.; Zein, S.

MS113-4 **J-UG22**

Numerical simulation of microstructures
Chairperson: K. Sab

09:50 5403 Order-reduction based computational homogenization of the three-dimensional visco-elastic properties of composites
Fritzen, F.; Böhlke, T.

10:10 5404 A Lippmann-Schwinger method without Fourier transform to solve thermomechanical problems over voxel grids
Yvonnet, J.; Zhu, Q.; Monchiet, V.

10:30 5405 A Galerkin approach to FFT-based homogenization methods
Brisard, S.; Dormieux, L.; Sab, K.

10:50 5406 Solving linear sparse systems on threedimensional structured grids using matrix-free methods - a comparison
Keßler, A.; Könke, C.

MS116-3 **M-HS16**

Coupling of different numerical methods
Chairperson: C. Dünser

09:50 5407 A new approach towards the numerical integration of multibody systems with unilateral constraints
Esefeld, B.; Ulbrich, H.

10:10 5408 Upwind-difference potentials method for Patlak-Keller-Segel chemotaxis model
Epshteyn, Y.

MS118-4 **M-HS23**

Image based modeling of heterogeneous materials
Chairperson: G. Legrain

09:50 5409 Stochastic modelling and analysis of porous media using first-order perturbation-based homogenization method
Basaruddin, K.S.; Takano, N.

10:10 5410 Stochastic reconstruction of porous media and evaluation of their effective transport properties
Capek, P.; Vesely, M.; Hejtmanek, V.; Brabec, L.

10:30 5411 Image based stochastic multiscale investigation of vibrations in metal foam beams
Proppe, C.

MS127-2 **J-HS14**

Modeling of phase-transformation-related mechanical phenomena at different length scales
Chairperson: R. Mahnken

09:50 5412 Thermodynamic model for strain-induced crystallization in rubber
Thien-Nga, L.; Guilie, J.; Le Tallec, P.

10:10 cancelled 5413 Modelling of microstructural evolution of titanium during diffusion saturation by interstitial elements
Matychak, Y.; Tkachuk, O.; Pohrelyuk, I.; Fedirko, V.

10:30 5414 A constitutive model for TRIP coupling transformation related and plastic backstresses for including initial texture effects and capturing non-proportional load paths in structural applications
Fischlschweiger, M.; Cailletaud, G.; Antretter, T.

MS206-3 **M-HS31**

Unstructured high-order methods for computational fluid dynamics
Chairperson: P.E. Vincent

09:50 5415 Agglomeration-based physical frame dG discretizations for high-order accurate CFD
Botti, L.A.; Colombo, A.; Bassi, F.

10:10 5417 On the computation of low Mach flows using density-based solvers
Nogueira, X.; Khelladi, S.; Chassaing, J.; Colominas, I.

10:30 5418 Efficient high-order spectral difference solver for the linearized Euler equations
Deconinck, W.; Parsani, M.; Ghorbaniasl, G.; Lacor, C.

MS303-5 **J-HS17**

Innovative methods for fluid structure interaction
Chairperson: T. Kvamsdal

09:50 5419 Space-time shear-slip mesh update method for fluid-structure interaction problems
Schippke, H.; Zilian, A.

10:10 5420 Weak flux evaluation in primal and dual boundary-coupled problems
van Brummelen, H.; van der Zee, K.G.; Garg, V.V.; Prudhomme, S.

MS601-2 **J-UG21**

New product development by the synthesis of computational and experimental methods
Chairperson: R. Hinterhölzl

09:50 5421 LCM process simulation based on reliable permeability measurement
Mitschang, P.

10:10 5422 Analysis of innovative composite aircraft structures
Havar, T.L.; Werchner, C.

10:30 5423 Quantitative assessment of random field models in finite element buckling analyses of composite cylinders
De Groof, V.; Oberguggenberger, M.; Haller, H.; Degenhardt, R.; Kling, A.

Friday, September 14, 2012, 09:50 - 11:10

MS608-4 **M-HS32**

Reduced basis, POD and PGD model reduction techniques
Chairperson: H.G. Matthies

09:50 5424 Comparison of some reduction bases approaches for non-linear structural dynamic systems under different excitations
Lülf, F.A.; Tran, D.M.; Ohayon, R.

10:10 5425 Multi-GPU parallel two-phase flow simulations in presence of uncertainties
Griebel, M.; Zaspel, P.

10:30 5426 Model order reduction technique for localized non-linearities in multiphysics problem - applications in automotive industry
Da Silva, F.; Chevallier, G.; Saheli, M.

MS616 **M-HS50**

CFD in turbomachinery flow control
Chairperson: R. Willinger

09:50 5427 Shape optimization of a flow around circular diffuser in a turbulent incompressible flow
Erne, S.; Lenarcic, M.; Bauer, C.; Kyriacou, S.A.

10:10 5428 Turbomachinery flow simulations with OpenFOAM
Heinrich, M.; Schwarze, R.

10:30 5429 Numerical simulation of passive tip-leakage flow control method for axial turbines
Benoni, A.; Willinger, R.

MS624-2 **M-HS28**

Computational mechanics of biological tissues
Chairperson: P. Pivonka

09:50 5430 Study of the effect of mechanical loading on cell cultures in bone tissue engineering
Cruel, M.; Bensidhoum, M.; Sudre, L.; Puel, G.; Hoc, T.

10:10 5431 Some insight about the stress field produced by micro cracks near human bone cells
Budyn, E.; Jonvaux, J.; Hoc, T.

MS631-2 **M-HS30**

Optimization methods in imaging and learning: From continuous to discrete and reverse
Chairpersons: N. Thorstensen; O. Scherzer

09:50 5432 Variational and optimization approaches to image partitioning - discrete and continuous aspects
Schnörr, C.

10:10 5433 Convex relaxation methods for shape optimization and shape matching
Cremers, D.

10:30 5434 Variational algorithms for fast and robust shape reconstruction in imaging
Dogan, G.

MS633 **M-HS21**

Drag reduction and lift increasing by boundary layer control and by global shape optimization, at high speed
Chairpersons: A. Nastase; G.H. Schrauf

09:50 5435 Increasing of aerodynamical performances of flying configurations, via global shape optimization
Nastase, A.

10:10 5436 Simplified hybrid laminar flow control for transport aircraft
Schrauf, G.H.; von Geyr, H.

10:30 5437 High speed flow control using synthetic jet actuators
Nae, C.

10:50 5438 On increase of eficiency of plasma multi-actuator system
Chernyshev, S.L.; Kuryachii, A.P.; Rusyanov, D.A.; Skvortsov, V.V.

MS637-3 **J-SR10**

Error estimation and adaptive mesh generation
Chairperson: S. Perotto

09:50 5439 A multi-mesh adaptive scheme for air quality modeling with the finite element method
moved to MS637-2
Monforte, L.; Pérez-Foguet, A.

10:10 5440 Adjoint-based error estimation and adaptivity for slip models with applications to micro-fluidic flows
cancelled
Prudhomme, S.; Garg, V.V.; van der Zee, K.G.

MS644 **M-HS34**

Advanced numerical solution of coupled porous media problems in energy-related geotechnical applications
Chairperson: H. Shao

09:50 5441 Identification of the most important THM couplings in an engineered barrier system
Dupray, F.; Li, C.; Laloui, L.

10:10 5442 Finite element analysis of mechanics involved coupling processes in discretely fractured porous media for enhanced geothermal reservoir modeling
Watanabe, N.; Kolditz, O.

10:30 5443 Non-isothermal simulation of CO_2 storage in deep saline deformable formations
Vilarrasa, V.; Olivella, S.; Silva, O.; Carrera, J.

10:50 5444 Towards a European modelling framework analysing coupled physico-chemical processes in porous media for geotechnical applications
Goerke, U.; Wang, W.; Kolditz, O.

MS647 **J-HS12**

Computational modeling of interfaces in complex systems
Chairperson: I. Stanciulescu

09:50 5445 Development and validation of an elastic-perfectly plastic contact model for rigid body dynamics simulations
Brake, M.R.; Sumali, A.; Aragon, D.S.; Reu, P.L.; Bejarano, M.V.

10:10 5446 Stokes-Darcy coupling for layers with high permeability ratio - decoupled approach
Troian, R.; Drapier, S.

10:30 5447 Numerical simulation of interaction between oscillating bubbles and elastic structures
Gong, S.W.

10:50 5448 Numerical and mathematical approach to the behaviour of the interfaces in the flow through porous media
Tomoeda, K.

MS653-2 **J-SR62**

Scattering problems for quantum, electromagnetic, and acoustic waveguides
Chairperson: B.A. Plamenevskii

09:50 5449 Quantum transport in cylindrical nanowires with constrictions
Racec, P.N.; Neidhardt, H.

10:10 5450 On Maxwell system in waveguides
Plamenevskii, B.A.; Poretckii, A.

Friday, September 14, 2012, 09:50 - 11:10

MS657-3 **J-SR20**

Fast boundary element methods: analysis, numerics and applications
Chairperson: M. Schanz

09:50 5451 Non-linear simplified approach for soil-structure interaction
Maestre, J.; Romero, A.; Galvín, P.

10:10 5452 Comparison and optimization of different hierarchical matrix techniques for elasto-plastic problems treated with the BEM
Zechner, J.; Beer, G.

10:30 5453 Fast simulation of droplet formation using the boundary element method
van Zwieten, G.; van Brummelen, H.

10:50 5454 BEM++ – a high-performance boundary element library
Smigaj, W.; Arridge, S.; Betcke, T.; Phillips, J.; Schweiger, M.

MS662-2 **M-Elise Richter**

Robust multilevel and multiscale methods
Chairperson: J.K. Kraus

09:50 5455 Numerical approximation of asymptotically disappearing solutions of Maxwell's equations
Adler, J.H.; Petkov, V.; Zikatanov, L.

10:10 5456 A parallel multilevel ILU solver for fully coupled Navier-Stokes equations
Wubs, F.; Thies, J.

TS007-7 **M-HS46**

Computational biomechanics
Chairperson: S. Kling

09:50 5457 Target control of mechanical systems: a posteriori error estimation and weak formulation of inequality constraints
Johansson, H.

10:10 5458 Customized triflange acetabular cup analysis
Ruben, R.B.; Teixeira, D.; Alves, N.M.

TS011-2 **J-SR64**

Computational environmental science
Chairperson: T.A. Kowalewski

09:50 moved to TS011-1 5459 Application of a multiscale turbulence prediction system for aviation safety and wind turbine siting
Rasheed, A.; Sørli, K.; Kvamsdal, T.

10:10 cancelled 5460 Minimizing the environmental impact of wastewater discharges with SOS
Martinez, A.; Alvarez-Vazquez, L.J.; Garcia-Chan, N.; Vazquez-Mendez, M.E.

10:30 moved to TS011-1 5461 A three fields finite elements solver and variational data assimilation for viscoplastic free surface flows - application to glacier flow
Martin, N.; Monnier, J.

TS013-4 **M-HS42**

Computational geomechanics
Chairperson: J. Tejchman

09:50 5462 Numerical simulation of current driven sediment transport processes
Burkow, M.

10:10 5463 Large deformation analyses of torpedo anchor and spudcan installation by using the ALE and CEL methods
Khoa, H.D.V.; Jostad, H.P.

10:30 5464 The orientation of melt bands in an extending lithosphere
Muhlhaus, H.B.; Mohajeri, A.; Finzi, Y.

10:50 5465 Numerical analysis of a large-scale and deep cylindrical excavation in Shanghai soft deposit
Wang, W.D.; Chang, L.Y.; Xu, Z.H.; Weng, Q.P.

TS022-2 **M-HS47**

Computational NDE and wave propagation
Chairperson: P. Trovalusci

09:50 5466 Modelling of nonlinear vibro-acoustic wave interaction in cracked aluminium plates using local interaction simulation approach
Martowicz, A.; Packo, P.; Staszewski, W.J.; Uhl, T.

10:10 5467 Real-time image-based FIT simulation using GPU computing and its application to nondestructive testing
Nakahata, K.; Kimoto, K.

10:30 5468 Excitation of Lamb waves using higher order coupled field elements for structural health monitoring applications
Duczek, S.; Willberg, C.; Gabbert, U.

TS024-2 **J-HS15**

Computational polymers and polymer composites
Chairperson: P.P. Camanho

09:50 5469 contribution moved to TS017-2

10:10 5470 Mullins' effect in polymer/clay nanocomposites: observations and constitutive modeling
Drozdov, A.D.

10:30 5471 Fatigue analysis of fiber-reinforced polymers
Vervoort, S.

TS025-11 **J-HS11**

Computational solid and structural mechanics
Chairperson: W. Ostachowicz

09:50 5472 Analysis of clothing pressure on the human body
Kobayashi, T.; Oi, S.; Sato, M.; Isogai, Y.; Furuichi, K.; Ishimaru, S.; Nonomura, C.

10:10 5473 Quantification of the effect of SHM in structural aircraft maintenance in uncertain environment
Cot, L.D.; Gogu, C.

10:30 5474 Modelling drop impingement erosion of steam turbine blades
Mlikota, M.; Weber, U.; Schmauder, S.

TS062-3 **General topics** **M-HS07**

Chairperson: J. Eberhardsteiner

09:50 5475 Design of pavements airside at Vienna international airport
Eberhardsteiner, L.; Blab, R.; Hofko, B.; Gagliano, B.

10:10 5476 Evaluation of subgrade reaction of rigid airfield pavements on the basis of falling weight deflectometer tests
Blab, R.; Eberhardsteiner, L.

10:30 5477 CFD prediction of aerodynamic pressures on silo surfaces to investigate wind induced ovalling vibrations
Hillewaere, J.; Degroote, J.; Lombaert, G.; Vierendeels, J.; Degrande, G.

11:10 - 11:40

Coffee Break

Friday, September 14, 2012

11:40 - 12:20

SPL28 **M-Audimax**

Semi-Plenary Lecture
Chairperson: R. de Borst

11:40 5000 New strategies in numerical modeling of fracture in brittle materials
Pandolfi, A.

SPL29 **J-HS10**

Semi-Plenary Lecture
Chairperson: C. Sansour

11:40 5001 Multiscale challenges in the simulation of nucleation and growth processes: from transition pathways to reaction coordinates
Dellago, C.

SPL30 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: T.A. Kowalewski

11:40 5002 Modelling particle laden flows by hybrid model approaches
Pirker, S.

12:20 - 13:00

SPL31 **M-Audimax**

Semi-Plenary Lecture
Chairperson: H.A. Mang

12:20 5003 Some recent developments of non-linear multi-scale strategies in structural mechanics
Allix, O.

SPL32 **J-HS10**

Semi-Plenary Lecture
Chairperson: E. Oñate

12:20 5004 Computational neuromusculoskeletal modelling to examine tissue loading in humans
Lloyd, D.; Sartori, M.; Gerus, P.; Saxby, D.; Fregly, B.J.; Besier, T.; Delp, S.; Banks, S.A.; Pandy, M.; D'Lima, D.D.

SPL33 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: A. Soldati

12:20 5005 Recent developments and perspectives in computational fluid dynamics for hydrodynamic applications
Visonneau, M.

13:00 - 13:40

SPL34 **M-Audimax**

Semi-Plenary Lecture
Chairperson: J. Eberhardsteiner

13:00 5006 Validation of selected computational fluid dynamics problems
Kowalewski, T.A.

SPL35 **J-HS10**

Semi-Plenary Lecture
Chairperson: H. Böhm

13:00 5007 Preconditioning for bounded retardation in simulation based design optimization
Bosse, T.; Griewank, A.; Lehmann, L.

SPL36 **NIG-HS I**

Semi-Plenary Lecture
Chairperson: F.G. Rammerstorfer

13:00 5008 Atomistic modeling of the mechanical stability behavior of fullerenes
Hartmann, M.A.; Todt, M.; Holec, D.; Mayrhofer, P.H.; Paris, O.; Fischer, F.D.; Rammerstorfer, F.G.

13:40 - 14:00
Congress Closing